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DUKE UNIVERSITY CAMPUS PLANNING STUDY. PHASE I.

Caudill, Rowlett and Scott, Houston, Tex. Architects.

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The goals of this study are to--(1) analyze the educational program and determine the adequacy of the present physical plant to accommodate that program, (2) identify the basic disparities between program and plant, and point out the physical plant inadequacies, (3) develop several alternative solutions for resolving these disparities, and (4) delineate and explain the implications of four basic alternative concepts for future development of the physical plant. The basic deficiency of the present physical plant was its location on two separate sites about 1 mile apart. Plans based on these concepts resulted in four basic alternatives for integrating and developing the section between the two campuses. The four alternatives are evaluated in light of the educational program, cost, and design. The plan recommended is a blend of two of the basic alternatives. Specific decision point considerations were related to land use, landscaping, preservation of natural surroundings, parking, traffic circulation, and building proximity. (HH)

ED022322

Duke University Campus Planning Study

Phase 1

EF 001008

DUKE UNIVERSITY

CAMPUS PLANNING STUDY

PHASE I

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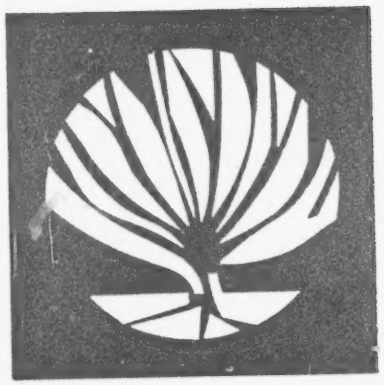

Caudill, Rowlett and Scott
Architects - Planners - Engineers
Houston, Texas July 1964

Acknowledgments

The development of a Comprehensive Campus Plan for Duke University is a process involving hundreds of persons over a span of several years. A page or two will not allow us to properly acknowledge our gratitude to all those who have contributed to the effort.

The current study may be thought of as commencing with the appointment of the Long Range Planning Committee, since renamed the University Planning Committee, in 1959. The committee published three annual reports dealing primarily with the educational program and its growth. Several committees were appointed by the UPC, including the Educational Facilities Committee, representing the faculty, and chaired by Dr. Frank de Vyver. The Building and Grounds Committee of the Board of Trustees has taken a keen interest in the development of the plan. As planning consultants we report directly to these two groups.

Representing the administration most directly in the planning process are the President, Dr. Douglas M. Knight; Vice President for Business and Finance, Mr. Gerhard C. Henricksen; Vice President, Dr. Everett H. Hopkins; Business Manager, Mr. John M. Dozier; and University Architect, Mr. Henry Mayfield.

We have enjoyed our association with this team since early 1963. We are indeed grateful to many others unnamed in this list. We look forward to working even more closely with many of you during Phase 2 of the study.

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THE DUKE PLANNING STUDY

Duke University is faced with the problems which accompany growth. This growth is the inevitable response to a demand by increasing numbers of young citizens for excellence in education. The University must plan not only to accommodate more students, but to upgrade the physical plant as facilities become obsolete because of age, technology, and advanced teaching requirements. The University administration decided that a comprehensive campus plan was needed to answer some of the problems of how to grow in size and efficiency, without sacrificing the beauty of the natural landscape and the heritage of the existing campus.

SCOPE OF TOTAL STUDY

The planning study is being conducted in two phases:

PHASE 1, The investigative process, which consists of

1. Educational program and backup data prepared by Duke University.
2. Analysis of program and facilities by CRS with assistance by Duke.
3. Delineation of basic plan concepts and design possibilities implied by the analysis.
4. Selection of a basic concept (or possibly a combination) upon which future detailed planning will be based.

PHASE 2, The development process, which consists of

1. Refinement and detailing of educational program.

2. Clarification of any policies and assumptions for which a need may have been demonstrated during Phase 1.

3. Delineation of the detailed Comprehensive Campus Plan.

Simultaneously with the Phase 1 investigations a design study was conducted to determine valid criteria for construction of future buildings on the Gothic West Campus. The findings were published in a separate report.

PURPOSE OF THIS REPORT

This report is a summary exposition of Phase 1. No attempt has been made to document the wealth of data furnished by the University and analyzed during the investigation. The purpose of this report is to:

1. Summarize our analysis of the educational program and University physical plant.
2. Identify the basic problems and implications.
3. Point out several alternative solutions for specific problems.
4. Delineate and explain the implications of four basic alternative concepts for future development of the physical plant.

ACTION SOUGHT

We would suggest the following action by the University as prerequisite to the intelligent development of Phase 2:

1. Review of Phase 1 findings, including
   (a) Criticism of the analysis and conclusions.
   (b) Selection of the basic concept favored by the University.
2. Definition of all possible program and policy decisions needed to resolve the problems uncovered during Phase 1, or needed to clear the way for development of the concept selected.

PROGRAM

A successful university plant is one in which the buildings are located and designed to serve the educational program. If the program must be modified to adapt it to the campus, which is too often the case, then the original design premises were wrong, or the plant is too rigid to adapt to change. Our first task is to find out all we can about Duke's program objectives. The following summary is derived from our interpretation of documents published by the University, conferences with administration and faculty, and review of our first draft by the Educational Facilities Committee. It is presented here in order to solicit further evaluation and refinement for use as a basis for future planning.

MAJOR GOALS

DUALITY: Duke University is committed to the twofold ideals of:

1. Unity: Reinforcing, educationally and physically, the unity of the University as one institution with one campus.

2. Identity: Maintaining and reinforcing the identities of its traditional undergraduate colleges,

TRINITY COLLEGE

WOMAN'S COLLEGE

ENGINEERING COLLEGE

BALANCE: Duke University is dedicated to a balanced program through:

1. Continual improvement of undergraduate teaching.

2. Excellence and growth in graduate programs.

3. Excellence in research, but not at the expense of the teaching function.

CURRENT THINKING

In support of these major goals, current thinking indicates that:

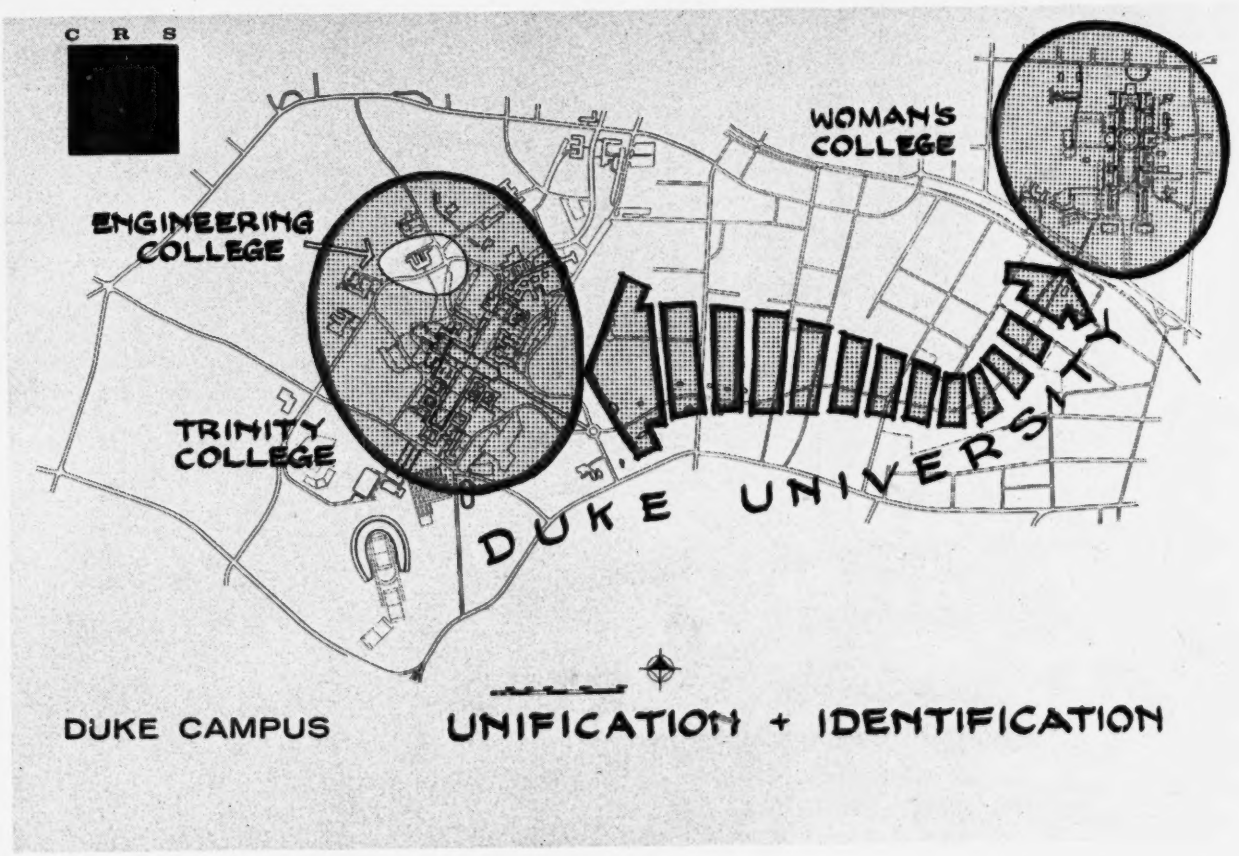
1. The Woman's College will be maintained and reinforced at its present location.

2. To provide the basis for a unified campus within the next twenty years, efforts should be made to purchase land not now owned by the University between the East and West campuses.

3. A separate research faculty will be discouraged. The erection of separate research facilities is not anticipated.

4. Excellence will continue to receive emphasis; enrollment growth will be modest and controlled.

5. Development emphasis will be based on strengthening current areas of activity rather than on seeking new programs (i.e., departments and schools) and involvements in the light of projected income.



EDUCATIONAL ORGANIZATION

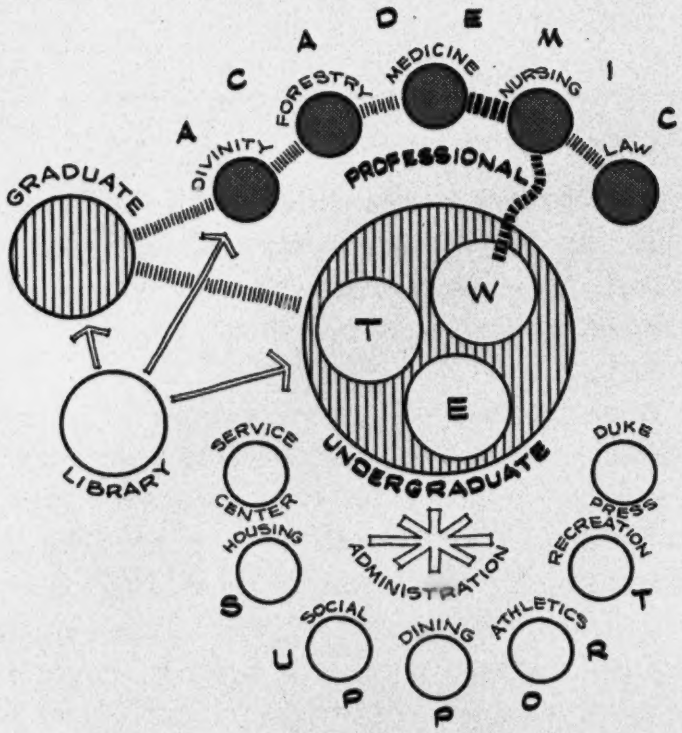
We have attempted to illustrate the educational organization of the University in two diagrams.

The first diagram illustrates the functional relationships of the principal components of the University as set forth in the official catalog and administrative organization. The three undergraduate colleges and the Graduate School of Arts and Sciences essentially share the same teaching departments and are served by the General Library. To complete the academic picture there are the five Professional Schools, of which Nursing is the only undergraduate school, with an affinity to both the School of Medicine and the Woman's College. The graduate professional schools are more or less independent. All the academic functions are served by the support activities which include the general library and central administration.

If the geographic relationships of campus activities are diagrammed a somewhat different picture results, as shown in the second diagram. All functions occur on the west side of the campus resulting in a duplication of the first diagram. However, only certain of these functions occur on the east side, either through splitting of single academic departments or by duplication of support facilities. Thus, geography emphasizes college identity through separation of non-coeducational housing and dining. Educational unity is achieved partly through geographic dispersal of teaching activities administered by single departments.

C R S

FUNCTIONAL RELATIONSHIPS



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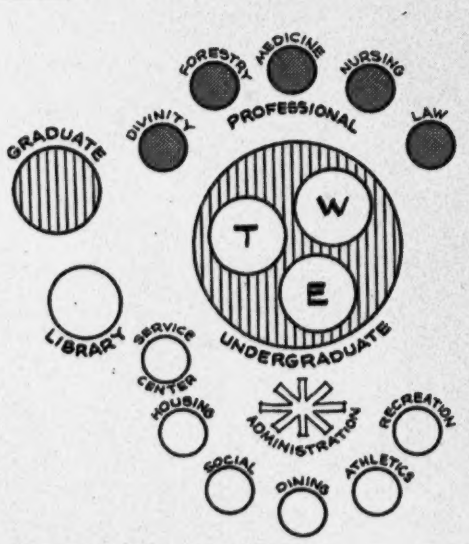
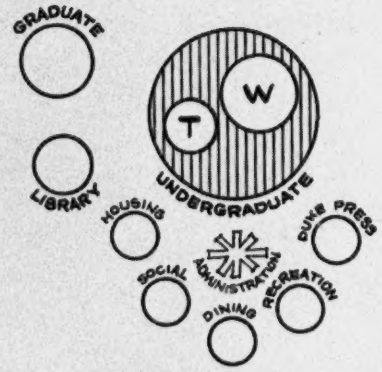
GEOGRAPHIC RELATIONSHIPS





TEACHING DEPARTMENTS

The organization of teaching departments reflects University unity. A group of single departments serves all undergraduate colleges and the Graduate School of Arts & Sciences. Most departments are headquartered on the West, and a majority teach courses on both East and West.

The chart on the next page shows the general geographic location of each department and the distribution of course enrollments among men and women. The location of each department headquarters is given "W" for west, "E" for east; the area of principal teaching activity is indicated by capital "E" or "W", and service courses taught at the other location are indicated by a lower case "e" or "w". Course enrollments by the number of men and women enrolled show their origin of College and residence. It should be pointed out that both men and women attend classes at both locations at their own discretion.

TEACHING METHODS

Duke University continues to favor personal teaching, with emphasis on individual instruction in small classes, seminars, and conferences, but with some increase in large classes and lectures.

UNDERGRADUATE DEPARTMENT LOCATIONS			COURSE ENROLLMENTS			
			MEN		WOMEN	
DEPARTMENT	HDQRS.	TEACHING*	NO.	%	NO.	%
AIR SCIENCE	W	W	129	100	0	0
ART	E	E w	156	35	290	65
BOTANY	W	W e	115	48	126	52
CHEMISTRY	W	W e	2121	76	675	24
CLASSICAL STUDIES	W	W e	201	67	99	33
ECONOMICS & BUSINESS ADMIN.	W	W e	908	81	219	19
EDUCATION	E	E	63	19	263	81
ENGLISH	W	W e	1370	58	975	42
GEOLOGY	E	E	244	64	137	36
GERMAN	W	W e	401	63	233	37
HEALTH & P.E.	W E	W E	1382	63	807	37
HINDI-URDU	W	W	1	20	4	80
HISTORY	W	W e	1123	64	625	36
MATHEMATICS	W	W e	1079	75	354	25
MUSIC	E	E	146	38	242	62
NAVAL SCIENCE	W	W	304	100	0	0
PHILOSOPHY	E	w E	301	56	241	44
PHYSICS	W	W	824	84	162	16
POLITICAL SCIENCE	W	W e	509	57	380	43
PSYCHOLOGY	W	W e	455	58	330	42
RELIGION	W	W e	732	59	509	41
ROMANCE LANGUAGES	W	W e	914	57	691	43
RUSSIAN	W	W	107	60	72	40
SOCIOLOGY & ANTHROPOLOGY	W	W e	297	51	282	49
ZOOLOGY	W	W e	498	52	460	48

*UPPER CASE LETTER INDICATES PRIMARY LOCATION, West or East.
Lower case letter indicates secondary location (service courses)

GROWTH

Projected enrollments by department and school have not yet been reconciled with those predicted for the total University. However, even with a policy of controlled growth, the demand for admissions will bring increases in enrollment.

A diversity of opinion currently exists regarding desirable and essential growth. A recent Business Office projection of a 25% enrollment increase from 6421 to 7900 students by 1970 was criticized by the Educational Facilities Committee as being excessive. It is generally agreed that considerable growth in graduate programs is desirable. Since graduate programs are normally not self-supporting, such growth may require greater expansion than anticipated in the undergraduate enrollment to "balance the budget." Both educational and economic factors must be given careful consideration by the administration and faculty in order to arrive at enrollment projections upon which detailed planning can be based.

Even with a relatively small enrollment increase, considerable expansion of the physical plant is anticipated in order to provide qualitative improvement of existing programs.

PROGRAM IMPLICATIONS

DUALITY

At first the task of achieving both University unity and College identity in terms of buildings and geography appears to be a confusing, if not contradictory one. The Educational Facilities Committee shed further light on the subject by comparing the campus scene to a federal system of government. In the words of the committee, "It is believed that a more accurate picture is one of coordinate colleges undergirding and supplementing, with various programs, the formal undergraduate education offered at the university level. The instructional departments 'belong' neither to Trinity College nor the Woman's College. What is considered important to the Colleges is that formal education should be closely related to residential situations in order to help create an intellectual climate in the light of which the Colleges may play their supporting and supplementary role in the total education of the students concerned."

The planning challenge, then, is to arrange the campus to promote a merging of the coordinate college support functions with the unified University educational program, in a way that will give the colleges an intellectual climate in addition to the physical identity of their residential and support activities. This, basically, is the present system. However, the recent trend has seen a migration of teaching and departmental activity to the "west" campus with the results that the image of the Woman's College has become more and more residential, and the identities of the University and Trinity College have tended to blur into one.

As one approach to resolving this dilemma we have tried to reduce all University functions to two basic kinds of activities as illustrated in the accompanying diagrams. (Page 13)

1. GENERIC ACTIVITIES: those of a general or often occurring nature, not requiring unique space, i. e., housing, dining, general classrooms.

2. UNIQUE ACTIVITIES: those of a non-repeating nature or requiring special facilities such as student center, chapel, stadia, auditoria, library.

Basically, the arrangement of these activities, and thus, the movement between them, will determine the degree of unity or identity achieved. The two diagrams illustrate this point. The separation of generic activities, for example, of men's and women's dining, reinforces the identity of Trinity and Woman's Colleges. The mixing of men and women in classroom instruction imparts a sense of University unity and forces an intermix of movement.

In the case of the unique activities the choice is usually that of having either one or two of each. Duplication, i. e., separate student centers, libraries, gymnasiums, reinforce the identity of the college in which they are located. One unique facility forces joint use, and thus tends to establish campus unity. This can backfire if such a facility, such as the chapel or stadium, becomes identified with Trinity College because of its location. The strongest unifying agent would appear to be joint use of important unique facilities which are centrally located.

The implications of this approach are:

1. Identity can best be reinforced by separation of generic activities and duplication of unique activities.

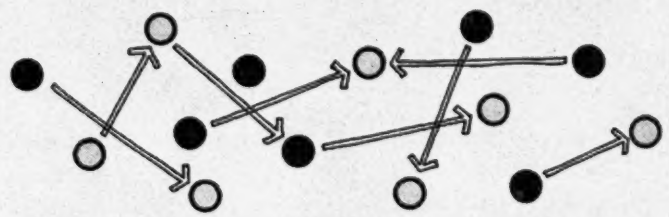
2. Unity can best be achieved by mixing generic activities (further "co-educationalizing") and by establishing joint use of single unique facilities.

To the extent to which these implications are in conflict with regard to a particular project, a decision must be made as to whether reinforcement of unity or identity will result in the best intellectual climate.

C R S

GENERIC ACTIVITIES

IDENTITY - BY SEPARATION



UNITY - BY MIXING

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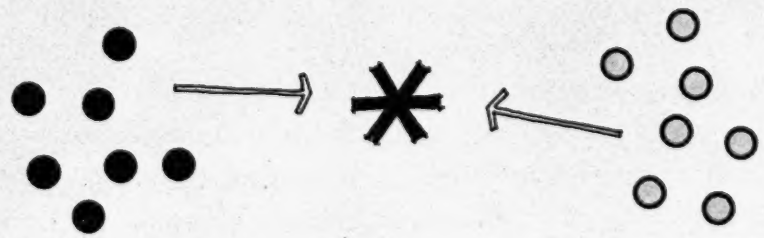
UNIQUE ACTIVITIES

IDENTITY - BY DUPLICATION



UNITY - BY JOINT USE

BALANCE

Duke's dedication to a balanced program carries these planning implications:

1. There will be no separate research center, at least for many years. This may cause some confusion in locating and operating research-oriented facilities which are often grouped in such a center, especially those with nuclear devices, large area requirements, or noxious characteristics.

2. Teaching facilities will tend to be large and complex.

3. The faculty will be large, numerically, requiring many individual offices for conferences and research.

ORGANIZATION

The functional organization and campus geography tend to exert differing effects on the overall program.

1. The single organization of undergraduate teaching departments is a key unifying factor.

2. The geographic separation of east and west ends of the campus gives a definite identity to the Woman's College, and generally reinforces the idea of a coordinate college system.

3. The locations of departmental headquarters could tend to establish an artificial identity with Trinity or Woman's College, at least to the uninformed observer.

4. The three geographic areas of the campus (east, central, west) might be planned to reflect the separate and unified aspects of the University by shifting all campus-wide functions to the center (i. e., teaching, administration), with the coordinate colleges at the end. However,

this runs counter to the objectives of integrating the residential and intellectual environment. In the words of the EFC, "The Committee feels that colleges, so called, which are simply residential centers cannot be deemed to be colleges in any sense of the word."

5. The three campus areas could be utilized to identify the three undergraduate colleges. This would be even further reinforced if the teaching departments were actually allied directly with the colleges, as is now the case with Engineering.

METHODS

Present teaching methods at Duke imply:

1. A demand for many small classrooms, seminars, and conference rooms. This means a greater than average amount of space per student.
2. A limited requirement for electronic (audio, visual, T.V.) teaching facilities.

Some increase can be expected in the demand for larger lecture rooms.

FUTURE NEEDS

The above factors, and the emphasis on qualitative improvement rather than quantitative growth imply a prinicpal need for additional unique rather than generic facilities. When present remodeling programs are concluded there should be a comparatively ample supply of classrooms, seminars, and offices. Such spaces are relatively easy to supply in existing buildings. However, special teaching facilities, centers for academic and cultural improvement (i. e., Arts Center), for public-oriented activities and for social and recreational enrichment will still be in short supply. Thus, relative to the present position, the most immediate opportunity for unity lies in the joint use of unique facilities rather than in further mixing of generic activities.

PROGRAMMED PROJECTS

Projects now in the programming stage include such special academic additions as a chemistry building, Arts Center, Education Center, phytotron, and medical center expansion. Improvements in housing are primarily designed to improve living conditions but will also accommodate a modest increase in residents. Non-academic facilities include a proposed Woman's Student Center, and University Center.

The following chart lists the projects hopefully programmed by the administration for construction by 1970, and their probable locations, based on today's thinking, indicated by a capital "X". Other possible locations are indicated by a lower case "x". There are enough projects in this group with some degree of flexibility of location to bear a dramatic influence on the course of campus development. Their locations will be the basic tools for implementing the selected development concept. The next map shows the scale of these projects in floor area relative to each other and to the existing campus.

PROPOSED BUILDINGS	GROSS AREA	ASSUMED LOCATION WEST	CENTRAL	EAST
1. WOMAN'S COLLEGE CENTER	45,000			X
2. WOMAN'S GYM & POOL	50,000			X
3. CLASSROOM & ADMIN. BLDG.	80,000			X
4. RESIDENCE HALL	75,000			X
5. HEATING PLANT	18,200		X	
6. SERVICE CENTER	150,000		X	
7. TELEPHONE CENTER	20,000	X	×	
8. ARTS CENTER	110,000	×	X	X
9. UNIVERSITY CENTER	180,000	×	X	×
10. EDUCATION CENTER	80,000		X	×
11. DUKE PRESS	45,000	×	X	×
12. FORESTRY	60,000	X	×	
13. ALUMNI & DEVELOPMENT	25,000		X	
14. FACULTY & GUEST CLUB	50,000	×	X	×
15. UNDERGRAD DORMS	220,000	X		
16. MATHEMATICS	40,000	X	×	
17. PHYTOTRON	15,000	X		
18. LIBRARY ADDITION	190,000	X		
19. CHEMISTRY	142,000	X		
20. ENGINEERING	185,000	X	×	
21. DIVINITY ADDITION	48,000	X		
22. PHYSICAL EDUCATION & POOL	25,000	X		
23. GRADUATE CENTER	170,000	X	×	×
MEDICAL CENTER TOTAL	1,164,900	X		

LONG RANGE POSSIBILITIES

Additional long range influence on identity and unity could be achieved by later shifting of other departments or activities which use generic types of facilities or need new ones, and could thus be considered as possible candidates for relocation. At some future time, these might include

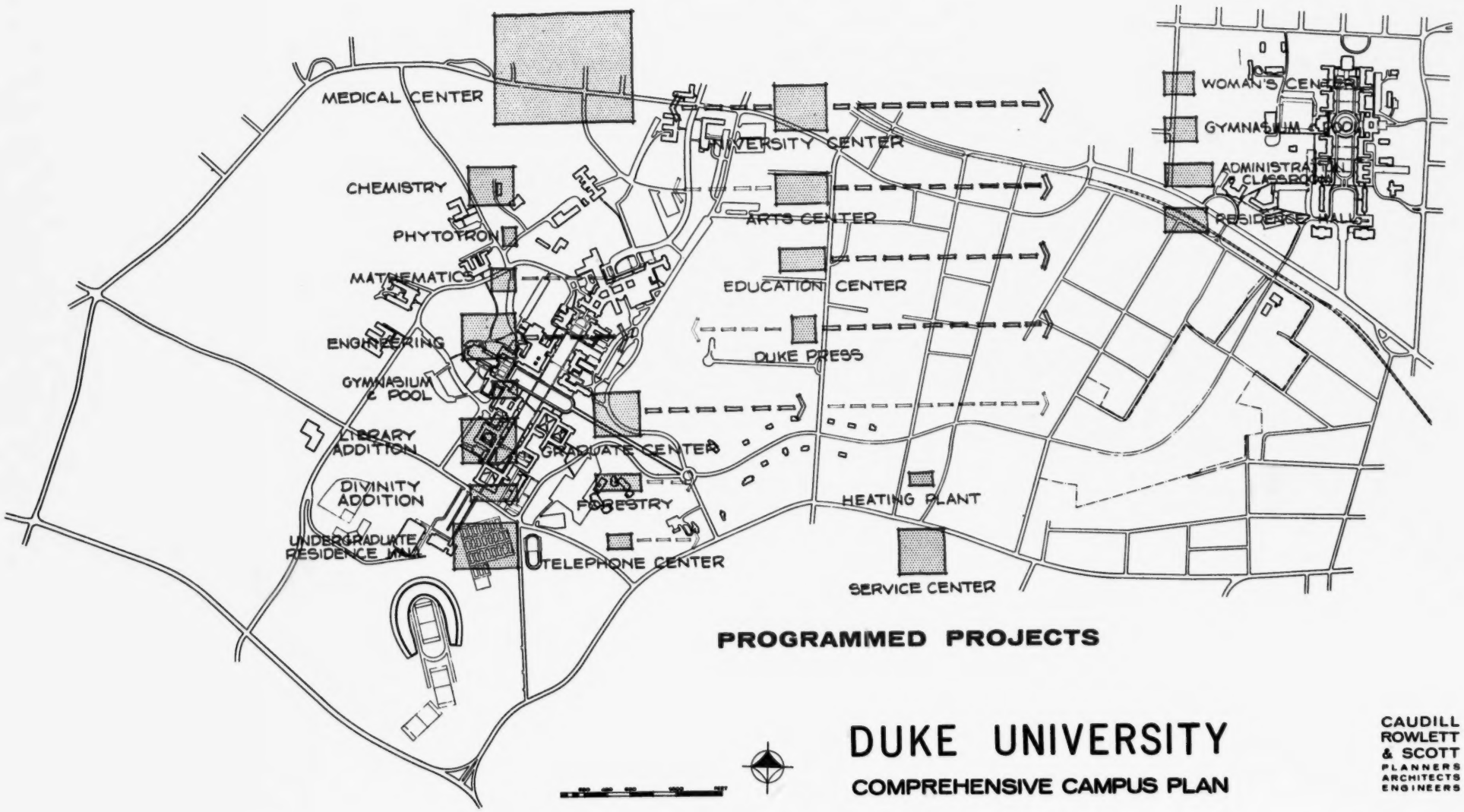
1. The entire administrative office complex.

2. Teaching departments or schools which utilize primarily general classroom space such as Economics, English, History, Philosophy, Religion (undergraduate department), Law, Education, Mathematics, or those needing major additions such as Engineering.

3. Faculty, graduate, and married student housing.

4. Recreation facilities.

Of course, existing program and building commitments introduce a wide degree of mobility among these activities. We are merely pointing out that in terms of long range planning, these possibilities can be considered.



PROGRAMMED PROJECTS

DUKE UNIVERSITY

COMPREHENSIVE CAMPUS PLAN

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PHYSICAL PLANT

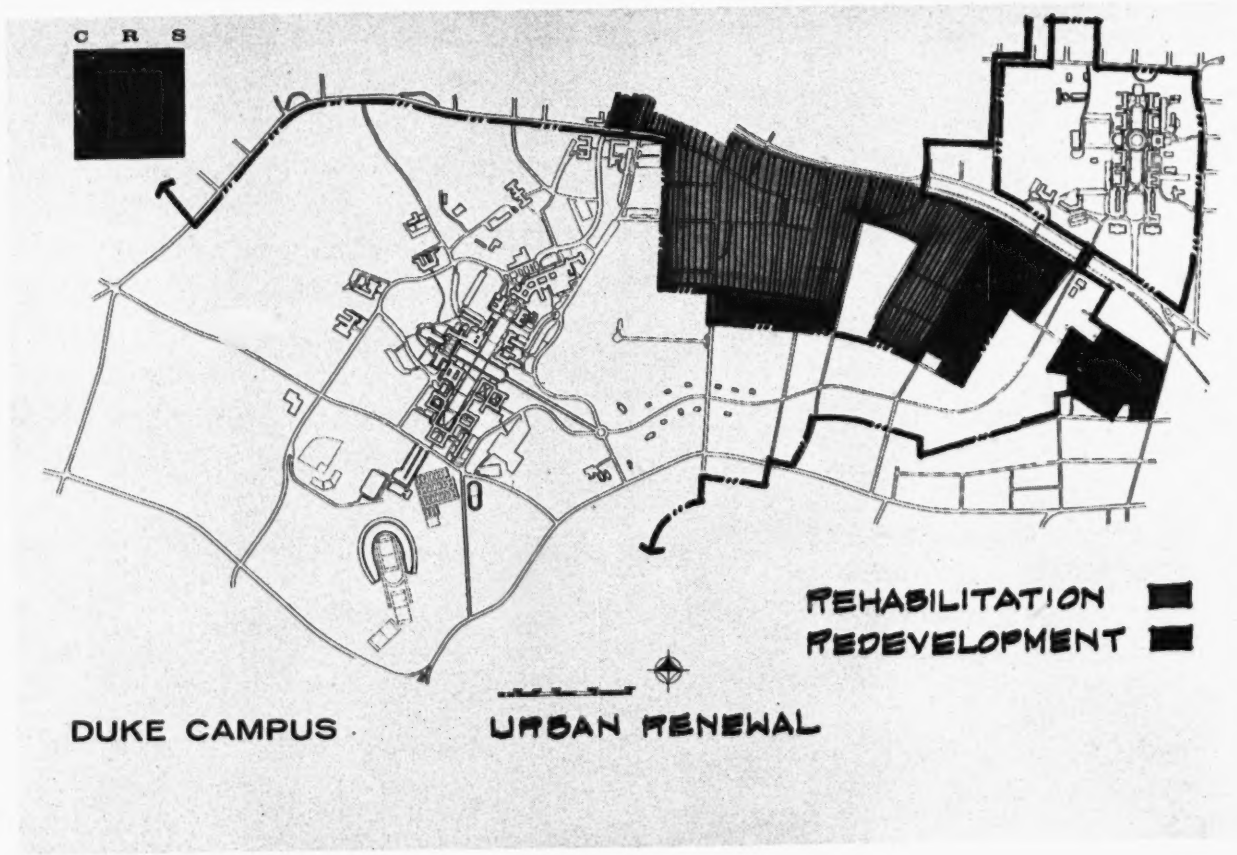
The educational program provides the basis for planning, but the realities of the physical environment must be analyzed and used to advantage. In spite of the inspiring beauty of Duke University, it is not entirely a utopian translation of program. Problems exist, and the costs of correcting them and fulfilling new requirements spiral upward continually.

CHARACTER

The subject of campus character, with emphasis on the west, or Gothic campus, was treated separately and in detail in the Design Study. It is notable that both the architectural character and the topography are quite different at each campus. The Woman's College, with its Georgian brick buildings and flat topography presents a serene and human warmth. The rugged hills and lofty Gothic architecture of the west express a dynamic and aspiring mood. The undeveloped central portion has the hilly topography and lush tree cover of the west campus.

ENVIRONS

The adjacent private land generally contains housing, with a considerable variety of quality and maintenance. The accompanying map indicates those areas presently designated for rehabilitation and for redevelopment by the Durham Urban Renewal Agency. The redevelopment area comprises approximately 54 acres and that requiring rehabilitation 120 acres.

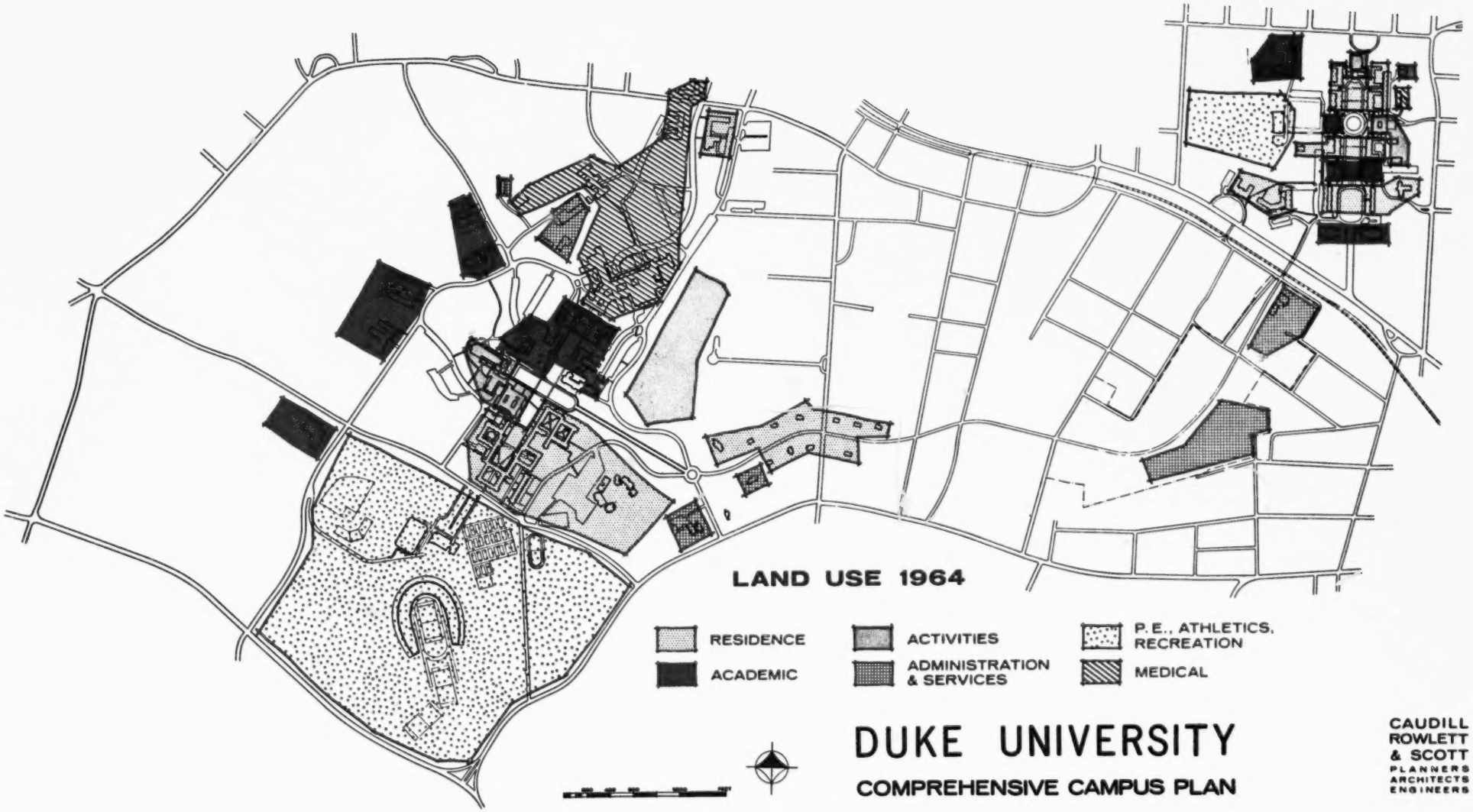


LAND USE

The general use of campus land is shown on the accompanying map. The basic arrangement of activities differs on the east and west ends of the campus. On the east housing and academic activities are mixed while on the west they are separated.

The central area is as yet largely uncommitted to permanent use, and large areas of the west are undeveloped. A proportionally small amount of land is used for academic purposes compared with that for other activities. Another characteristic on the west side is its low density and sprawl outside of the main quadrangle. The development of new engineering and sciences facilities west of the quadrangle has tended to accentuate the problem of geographic dispersal, at the expense of campus unity.

The relationships among uses are generally logical, for example the academic - housing - recreation arrangement on the west. However, some uses are interspersed out of sequence, from the viewpoint of academic affinities. An example of this is the location of the Engineering College between the new Biological Sciences Building and the Medical Center.



DUKE UNIVERSITY

COMPREHENSIVE CAMPUS PLAN

CAUDILL ROWLETT & SCOTT
PLANNERS
ARCHITECTS
ENGINEERS

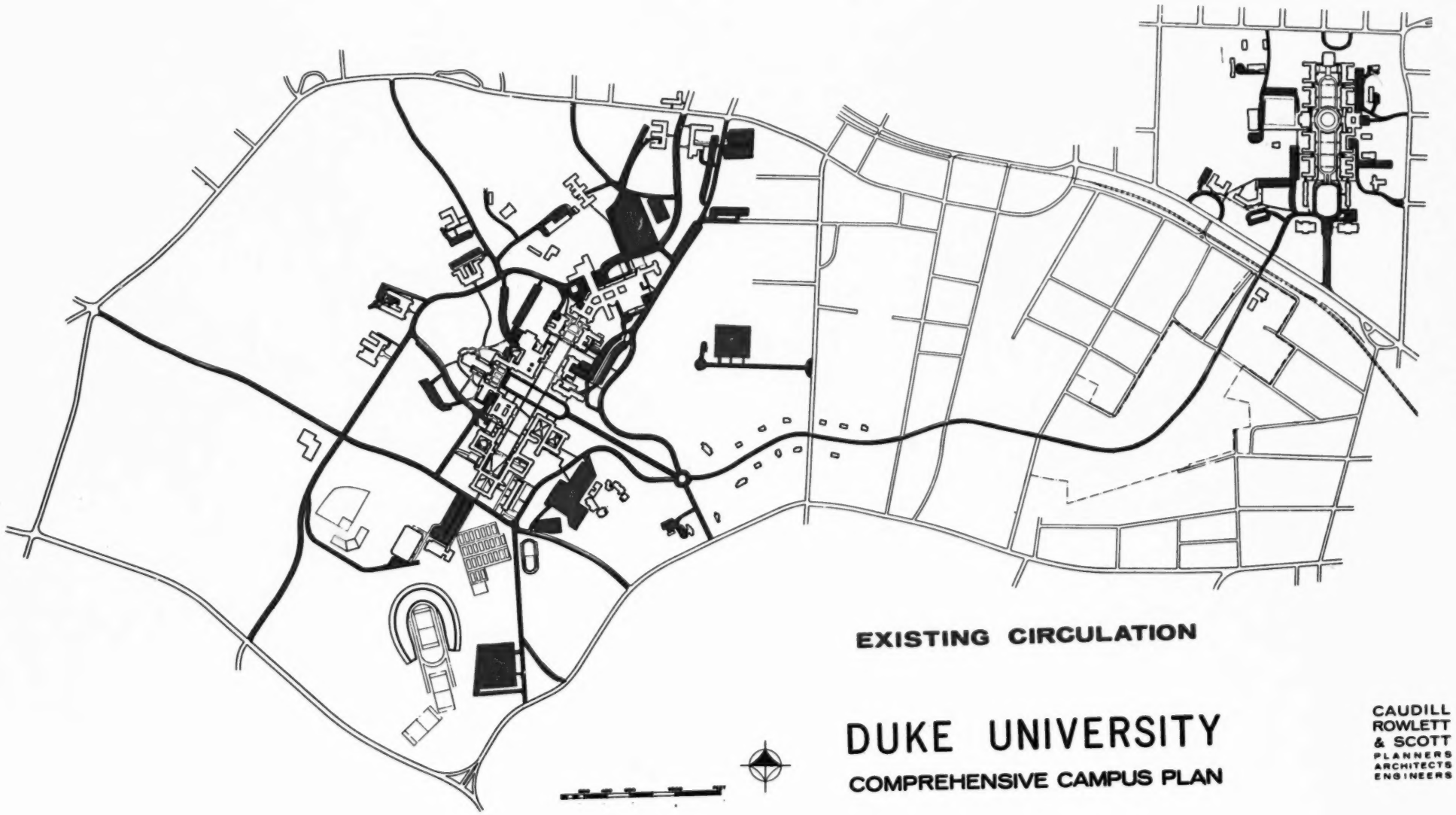
CIRCULATION

The accompanying map distinguishes between urban and campus vehicular routes although many of these receive joint use for both purposes. Current highway and city plans call for construction of an expressway parallel to the railroad, as shown by dashed lines, and a new connection between Swift and Maplewood Streets. Both of these routes will cross Campus Drive on elevated structures with no direct connection.

PARKING

Parking is an increasing problem. Its sting thus far has been minimized by use of trees and topography to screen parking lots. As existing parking lots become in more demand for future building sites and car registrations increase, the problem will intensify.

Until recently the compactness of campus development has minimized the parking problem by allowing perimeter parking to be feasible. The recent tendency to disperse the campus, on the west, necessitates interspersing of parking and buildings and accentuates the parking problem. It also encourages more automobile traffic which results in duplication and inefficient use of parking spaces.



EXISTING CIRCULATION

DUKE UNIVERSITY

COMPREHENSIVE CAMPUS PLAN

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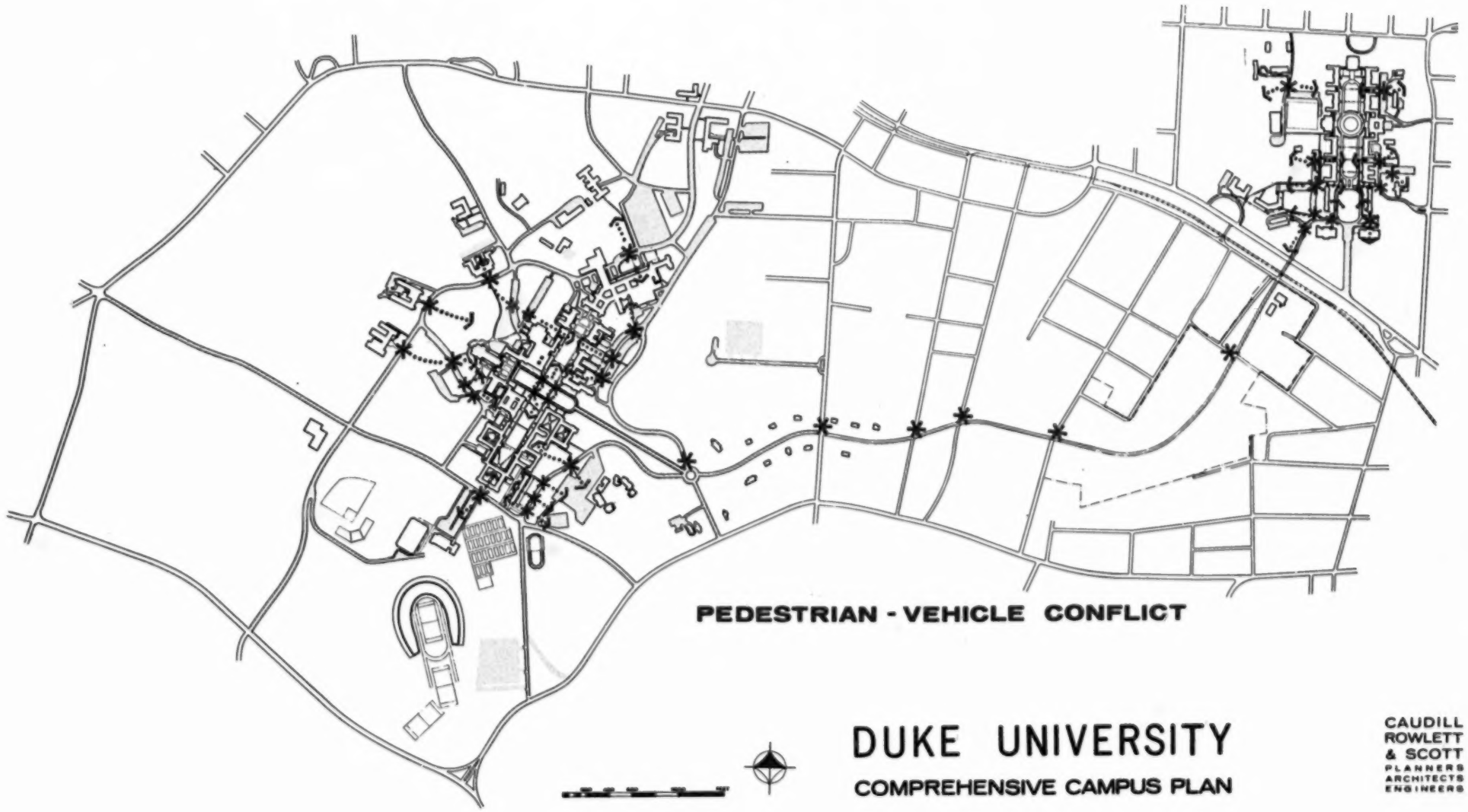
PEDESTRIAN-VEHICLE CONFLICTS

The inner core of each quadrangle is not violated by automobile traffic except for the approach to the Duke Chapel. The latter creates a series of pedestrian-vehicle conflicts and a "drive-in grocery" type of setting for the Chapel, both of which are extremely undesirable. Other pedestrian-vehicle conflicts are shown on the next map. These represent problems which should be eliminated, or at least minimized.

BUILDINGS

Most of the buildings at Duke were designed to fit either the Georgian or Gothic style, rather than as functional educational buildings. Increased complexity of educational functions has created problems in utilizing these inflexible structures.

The charm of many of these structures is undeniable, yet many on the east end are becoming obsolete. The original buff brick buildings are of wood frame construction and could be renovated only at exorbitant cost. However, it may be that these same buildings are making a greater contribution to the character of the campus than is generally assumed. Many of the newer red brick buildings are in desperate need of renovation. Most of the stone Gothic buildings on the west have recently been (or are currently being) renovated and will require little attention for many years.



PEDESTRIAN - VEHICLE CONFLICT

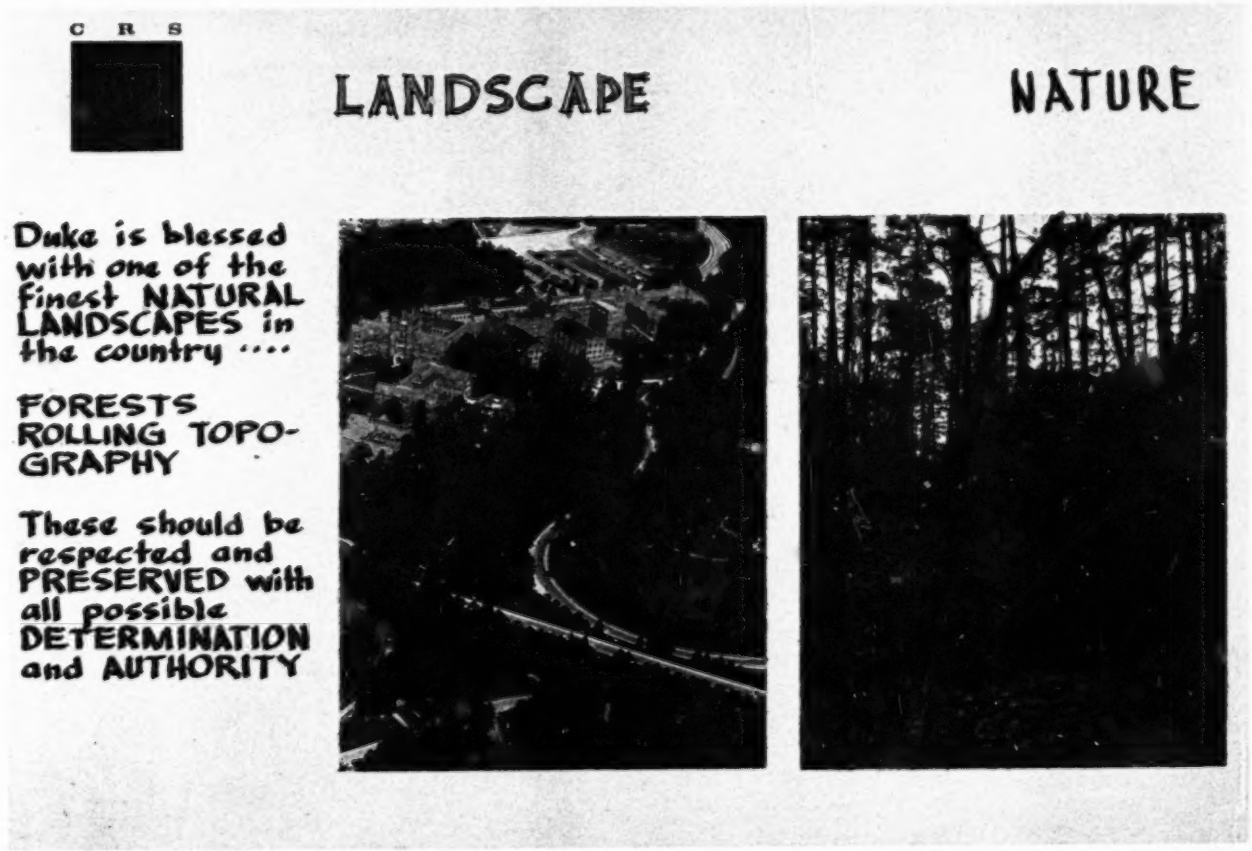
DUKE UNIVERSITY

COMPREHENSIVE CAMPUS PLAN

CAUDILL
ROWLETT
& SCOTT
PLANNERS
ARCHITECTS
ENGINEERS

LANDSCAPE

The existing natural landscape and most of the manmade improvements on the campus, are tremendous assets to the University. The area is endowed with an ideal growing climate and a bountiful supply of indigenous plant materials. The use of slate walks is an important unifying element of the landscape. The charm of both east and west campuses is due in large measure to the variety of formal and informal outdoor spaces, and their plantings and furnishings.


C R S
LANDSCAPE
NATURE
Duke is blessed with one of the finest NATURAL LANDSCAPES in the country ....
FORESTS
ROLLING TOPO-GRAPHY
These should be respected and PRESERVED with all possible DETERMINATION and AUTHORITY

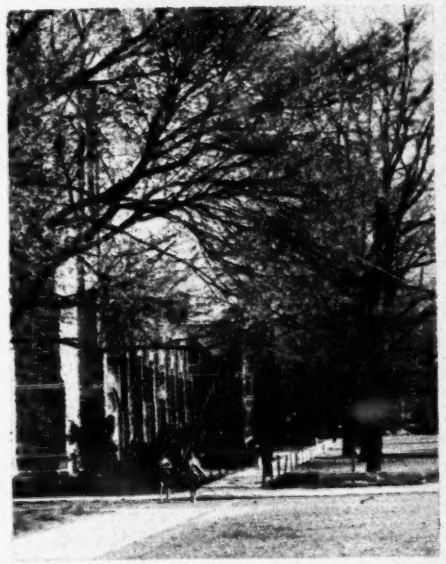
C R S

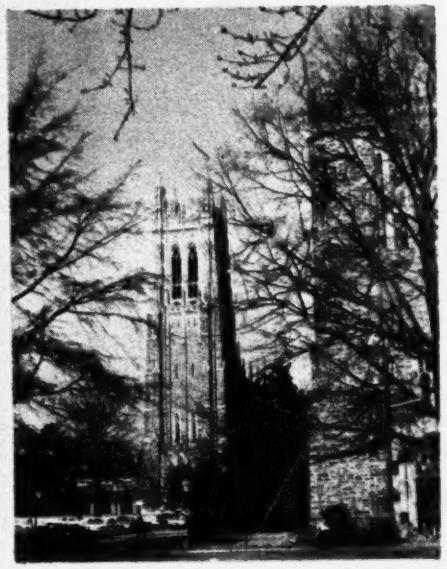
LANDSCAPE DESIGN

Time has proven the original Olmsted landscape design to be a fine one

It is basically simple, serene and dignified ... in keeping with the university atmosphere

Only minor criticism can be offered

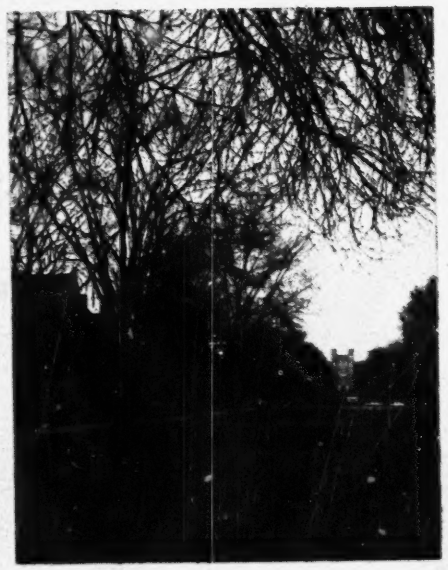




C R S

LANDSCAPE DESIGN

A. Trees were well placed ... vistas well established
B. Predominant use of willow oaks was a wise choice. Their use in the Gothic quadrangle and the Georgian mall reinforce campus unity.
C. For future development:
   1. Strengthen unity by replacing ailing elms with additional willow oaks
   2. Variety of flowering trees could reinforce identity of colleges
   3. Create variety for education but avoid aesthetic chaos



PHYSICAL PLANT IMPLICATIONS

PHYSICAL CHARACTER

Physical character, as well as geography, has a great deal to do with identity and unity. The strikingly different character of the Georgian and Gothic portions of the Duke campus have helped mold the image of the Woman's College and Trinity College. They have also, we suspect, brought a note of confusion to the image of Duke University. Generally, Duke has attained the identity of a Gothic campus, and the identity of the Woman's College has thus been further separated, to the detriment of University unity. Several inferences might be drawn:

1. Retention of the Gothic and Georgian character of each area will reinforce identity and dilute unity.

2. Bringing the character closer together with new buildings might reinforce unity, but destroy the physical identity of the "feminine and masculine" campuses.

3. The wonderful charm of the Woman's College, which the University desires strongly to retain, is the result of the total effect of the existing buildings, outdoor spaces and landscape. It will be extremely difficult to retain this character as old "obsolete" buildings are removed and replaced with new ones. Even if the result is architecturally satisfying it may not "feel like the Woman's College." In such a case the geographical retention of the east campus would fail in its objective.

4. It might be possible to establish a new image of Duke University through emphasis of the central campus, while leaving the existing Gothic and Georgian areas relatively intact to retain their identities.

AESTHETIC CONSIDERATIONS

In addition to the basic aspects of physical character, careful attention must be given to these aesthetic considerations:

1. Automobile traffic and parking should be minimized wherever possible within academic and residential areas.

2. Water features could be introduced into certain areas for interest and continuity.

3. Landscape treatment should include the softening or camouflaging of undesirable features such as cooling towers, transformers, and discordant architecture.

4. Special vistas such as those to the Chapel and the Sarah Duke Gardens should be cleared and reinforced.

5. The high quality of walks, gardens, courts, and retaining walls which generally prevail on the campus must be preserved and maintained.

6. Each additional building and structure must be designed to house its function, and to complement its environment.

ENVIRONS

The deterioration of portions of the University neighborhood detracts from the campus environment, but it does make certain land acquisition feasible in conjunction with the urban renewal program. The area designated as "redevelopment" has the most available status. It will be acquired by the agency, cleared, and sold for redevelopment to the University or others. That designated for rehabilitation will be improved and thus firmly committed to its present residential use unless purchased directly from the owners by the University.

Nearby properties which are now developed to high standards, although good neighbors, constitute a barrier to campus expansion. If the remainder of the area is now improved through renewal for residential rather than for University use, the campus boundaries will become permanently fixed.

Now is the time to decide upon the desired geographic extent of the campus. In a way, a second chance at geographic unity is presented, which might not have been assumed possible a few years ago.

LAND USE ARRANGEMENT

The pattern of land use has implications of unity and identity. These are not greatly significant, but:

1. The mixed residential and academic pattern on the Woman's campus tends to imply that the academic buildings are for the use of their adjacent residents--an identity factor.
2. The separation of academic uses on the west tends to open them to all users, implying a motive of unity.

LAND AREA NEEDS

The amounts of land required for different uses are significant.

1. Although such proposed academic facilities as the Arts Center require extra land for public parking, academic facilities generally will not demand large land areas.
2. The School of Medicine, already a large land user, will easily triple its area requirements.
3. Large areas are required for physical education, intramurals, and athletics. Intramural areas should be convenient to residence halls.
4. More space is required to park a student's car than is required to house him in a dormitory, and twice as much as is required for his instructional space.
5. Duke does not have a land shortage. In fact, the temptation to spread out too much must be resisted in order to reduce circulation problems.

CENTRAL LAND USE

The use of the central campus will be the key to future unification. Part of the central area is already committed to service center functions, and logically so. Other portions are restricted in width. It is likely that central land will have a far greater value to the University than that west of Science Drive. Opportunities for purchase in this area should be carefully considered.

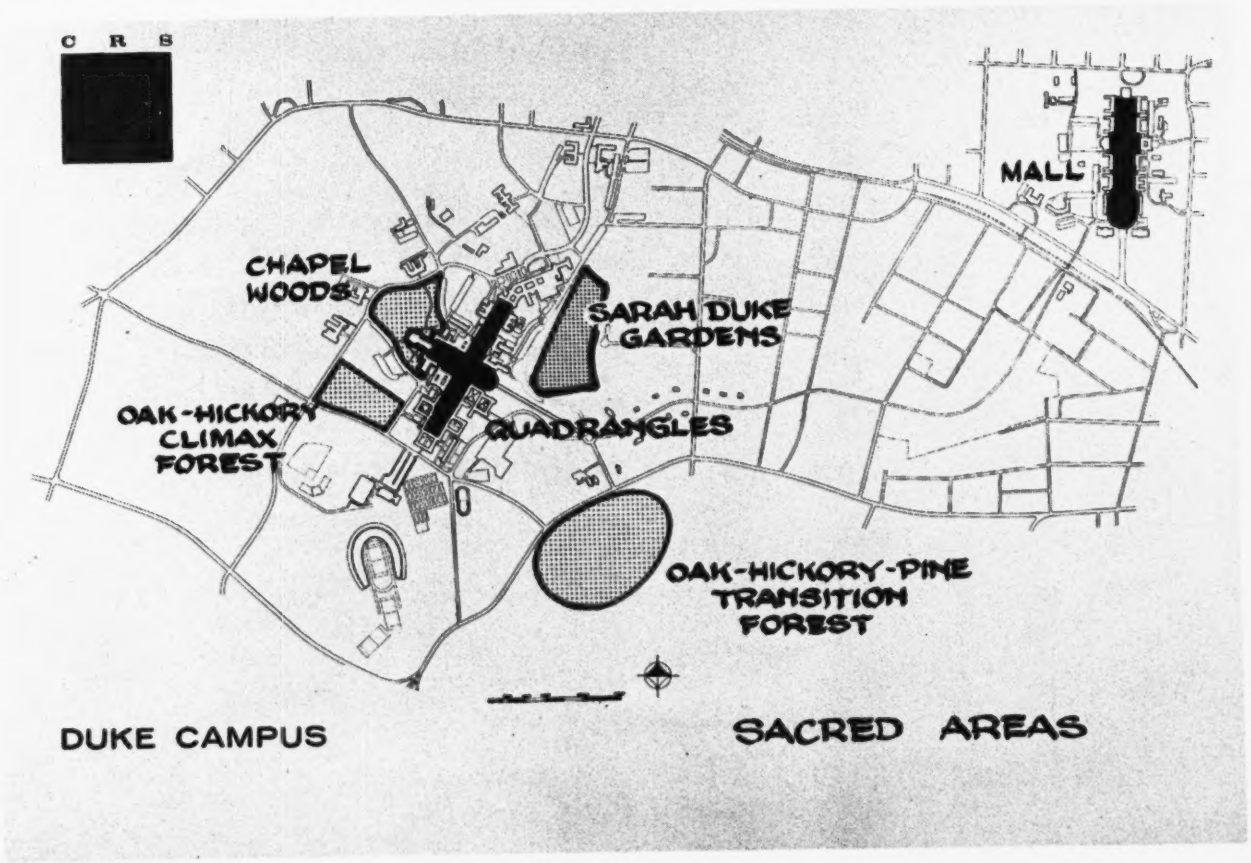
SOCIAL DESIRABILITIES

Certain social desirabilities have land use implications. Among these are:

1. The desirability of a central location for the proposed University Center.
2. The need for some University oriented (or owned) shops, service facilities, and "hang-outs" convenient to the pedestrian student.
3. Development of centrally located recreational facilities such as lighted tennis courts, outdoor swimming pool, amphitheater.

SACRED AREAS

Certain areas of the campus are assumed to be inviolate as shown on the accompanying map. Although such areas as the Gothic quadrangle might be altered successfully, from a design viewpoint, the University feels that such a basic change in character might bring on adverse reaction.



ALTERNATIVE LAND USE SOLUTIONS

The land use plan will be the basic tool for implementing program objectives through separation, mixing, or joint use of facilities. Several broad alternatives are suggested on the accompanying diagrams. Although pursuit of any of these in its pure form is unlikely, their implications relative to University goals are worth considering. One or more of these basic alternatives is incorporated in each of the plan concepts presented later in this report.

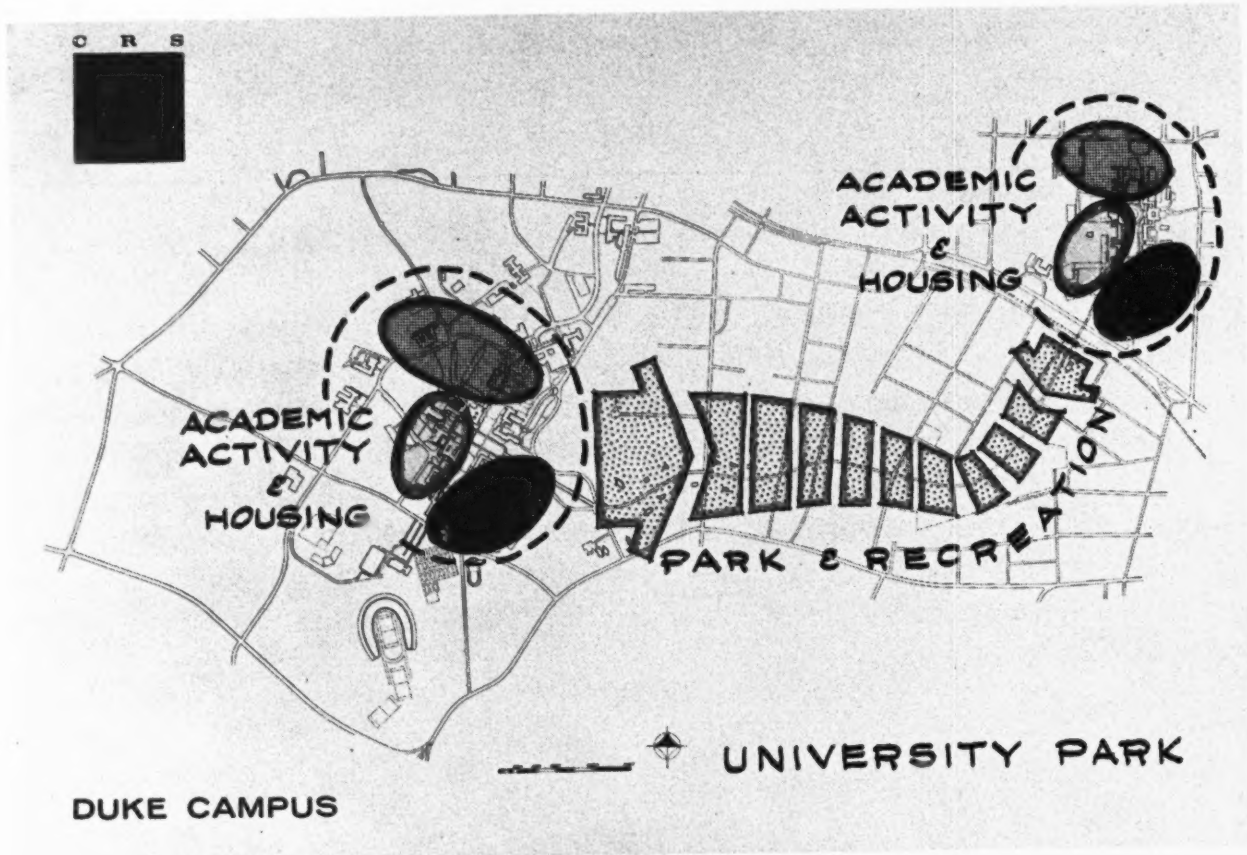
UNIVERSITY PARK

This plan would maintain the existing park-like atmosphere of Campus Drive and reinforce it with developed recreation activities as a unifying force. Identity of the undergraduate colleges would be reinforced by concentrating all new buildings at both ends.

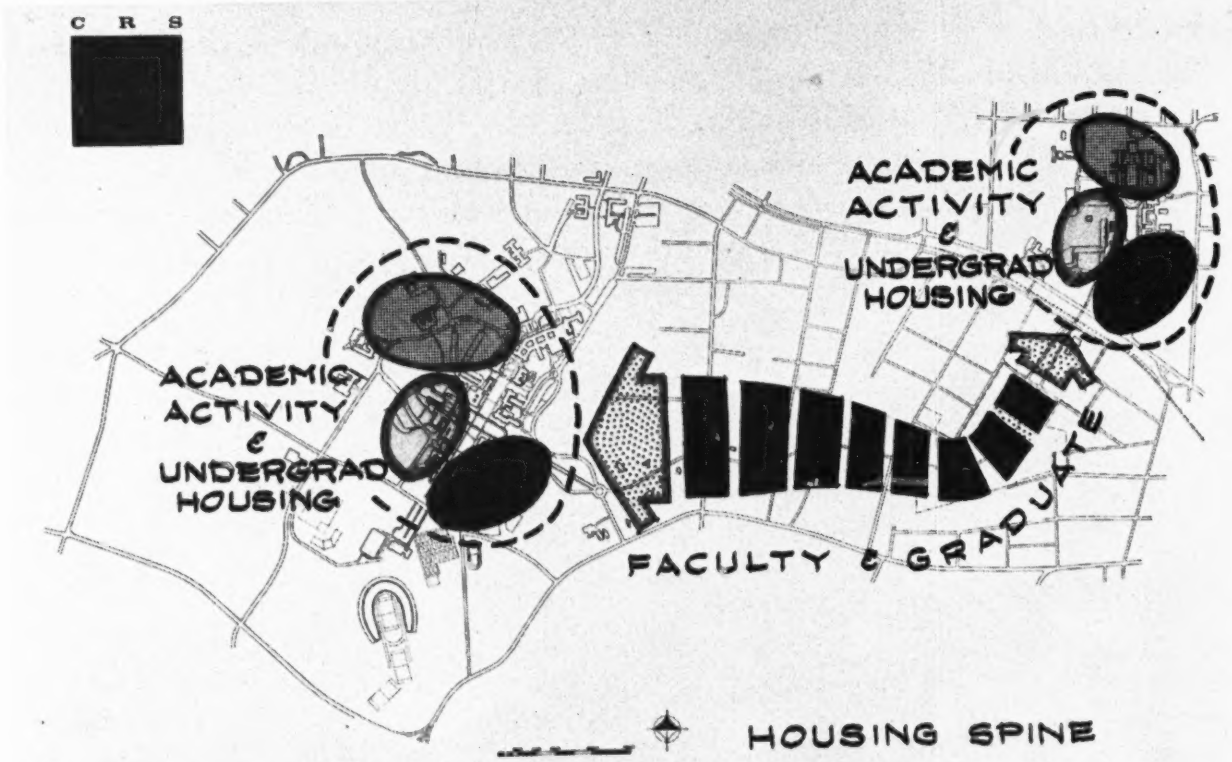
Such a plan would be easy to implement. It would also be "safe" in that it would effect a minimum change to the existing environment. It would be inefficient in utilization of the central area, and emphasize rather than ease the problems of geographic dichotomy.

HOUSING SPINE

This alternative would expand faculty housing along Campus Drive, and locate the proposed graduate center there. This solution reinforces the identity of the colleges by forcing all future development of undergraduate housing, academic buildings, and activities on either the east or west ends of the campus. Unity is not enhanced by this use of land, although it might be through movement to and from housing. Mixing of generic activities and joint use of unique facilities might be forced by avoiding their duplication at both ends and improving circulation.



DUKE CAMPUS



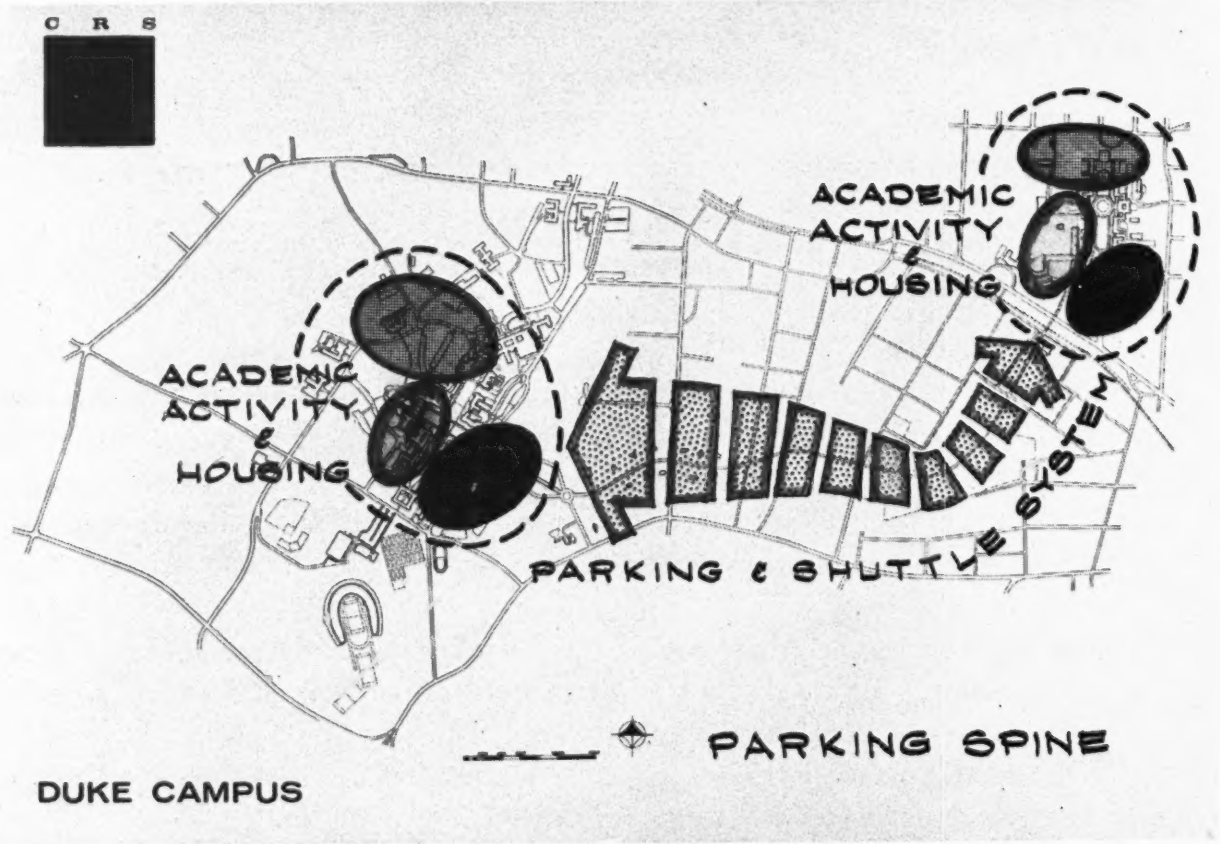
DUKE CAMPUS

PARKING SPINE

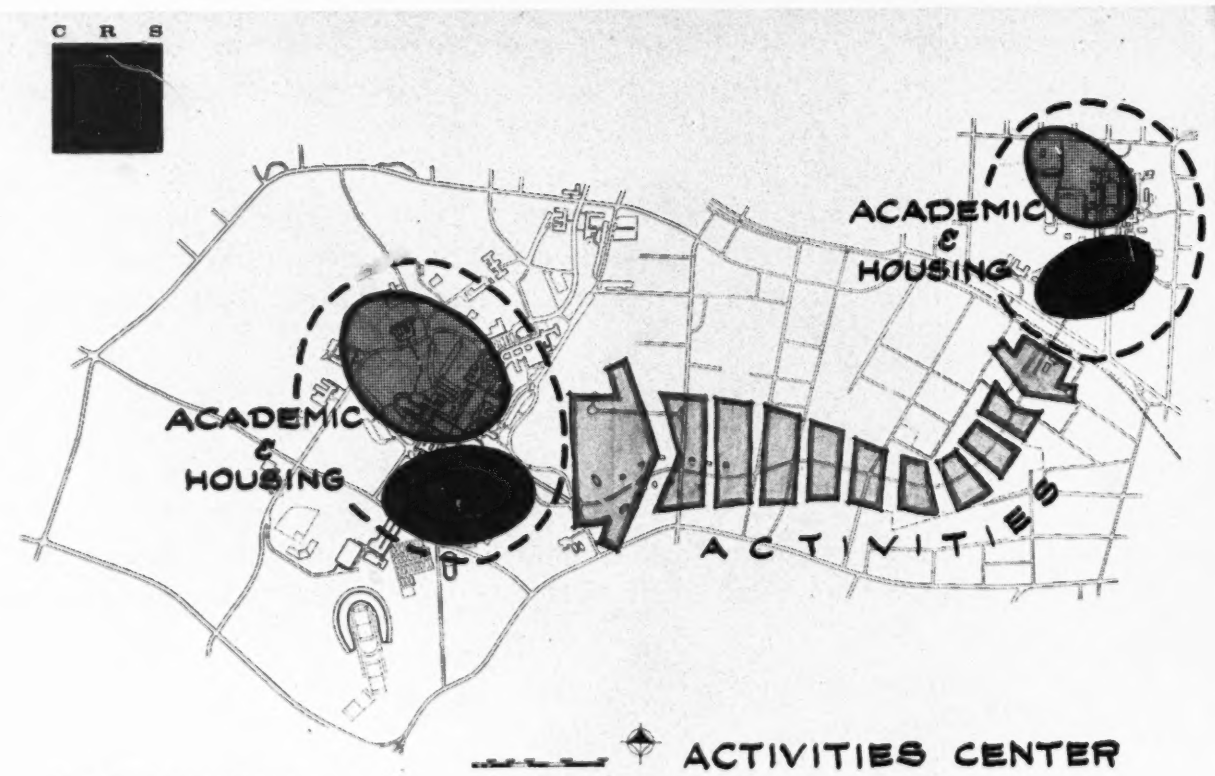
This plan would utilize the central portion for all vehicular parking, with a highly developed shuttle system east and west. It could offer an environmental advantage at both ends of the campus by eliminating cars and making the Colleges truly pedestrian. This, like the Housing Spine, represents a maximum reinforcement of College identity. It would be a far more valid solution at an urban commuter college than at a residential university such as Duke. This concept might have a partial application if all public oriented activities were located along Campus Drive, as described in the following alternative.

ACTIVITIES CENTER

Under this plan all public oriented facilities and many unique activities such as the University Center would be sited along Campus Drive, creating the "Civic Center" of the University. This could act as a unifying force, while reinforcing the undergraduate colleges with new academic and housing structures. Land acquisition would eventually be required. Circulation problems (along with unifying intermix) would increase.



DUKE CAMPUS



DUKE CAMPUS

URBAN CIRCULATION

Urban street improvements will have several important implications for campus development:

1. The new expressway will relieve traffic congestion on Main Street, making access to the Woman's College easier. However, it will be elevated on structure over Campus Drive which will certainly alter the character of that area, and might prove to be a formidable psychological barrier.

2. Swift Avenue and Maplewood will be widened and connected on a new alignment. This will be a major thorofare and should be grade separated where it crosses Campus Drive. This may be another psychological barrier, but will keep public traffic off Campus Drive, eliminate the need for a traffic light, and eliminate a traffic conflict.

3. Erwin Road will dead-end at the expressway. This may reduce public traffic on it and permit its practical use for campus and hospital traffic.

4. Highway 751 should be widened and improved in the future, but no plans for this are available now from the Highway Department. Improvements are needed to relieve traffic problems for faculty living in Duke Forest housing.

CAMPUS CIRCULATION

The current policy of preserving pedestrian areas within the principal quadrangles should be extended to eliminate as many vehicular-pedestrian conflicts as possible. General vehicular routes should be developed as a loop or perimeter system around each end of the campus, with only those penetrations

within the loop which are essential for emergency and special purposes. This means that:

1. Perimeter routing will either require new street construction, or joint use of urban streets for campus and public circulation.

2. Centrally located parking lots should be abandoned except where vehicle penetration to them will not conflict with pedestrian movement.

3. Policies must be established to set the maximum permissible walking distances for faculty, from parking lot to office.

TRANSIT

Campus geography necessitates some type of shuttle system. The present use of leased transit buses is satisfactory, but if a more pleasant type of vehicle or system were available, great environmental improvement would result.

PEDESTRIANS

The distance from east to west along Campus Drive is not too great for practical pedestrian movement, but the psychological barriers, vehicular traffic, inclement weather, high heels, and other circumstances tend to discourage most students from using their legs in this way. A more direct and suitably landscaped route could be developed for pedestrians only, which might prove more practical and popular.

ALTERNATIVE CIRCULATION SOLUTIONS

Three general circulation systems have been developed which can be implemented with the different possible land use solutions. As in the case of the land use studies, these are illustrative of broad principles, and a pure application of any one may never occur. However, they offer a comparison of long range possibilities and implications which may influence the selection of a general plan concept.

SOLUTION #1

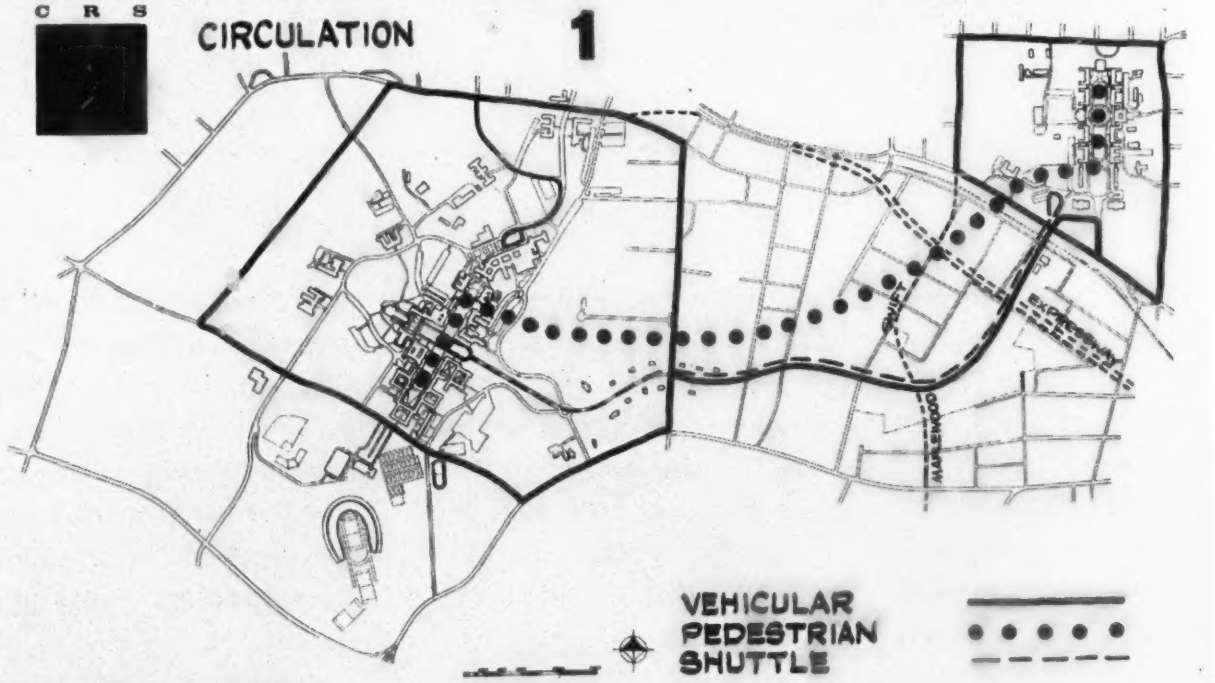
This system depends on some land acquisition to provide a more direct pedestrian route between campus extremes. Campus Drive is used by the shuttle system and private vehicles. Vehicle loops are used to move private vehicles around each portion of the campus to a point where they need to penetrate for parking or service. Many existing campus streets are closed to private cars and relandscaped as pedestrian ways which also handle emergency and service vehicles. The new pedestrian route is most applicable to the Activity Center or University Park type of land use plan, where there are pedestrian destinations in the central area and thus more reason to walk there. Many buildings could be located for pedestrian access from the north and vehicular access from the south. Maximum pedestrian-vehicular separation is achieved. The new walk and its accompanying space could be designed at a pedestrian scale which would be difficult to achieve on Campus Drive.

SOLUTION #2

This solution is merely a refinement of today's system, with all intracampus movement on Campus Drive, and an internal loop drive on the west. It is economical, but offers only minor reduction in pedestrian-vehicle conflict. It is most direct for car drivers, and is predicated on only minor student activity in the central area. Of course, this scheme could also utilize the wider west loop of Solution #1.

C R S

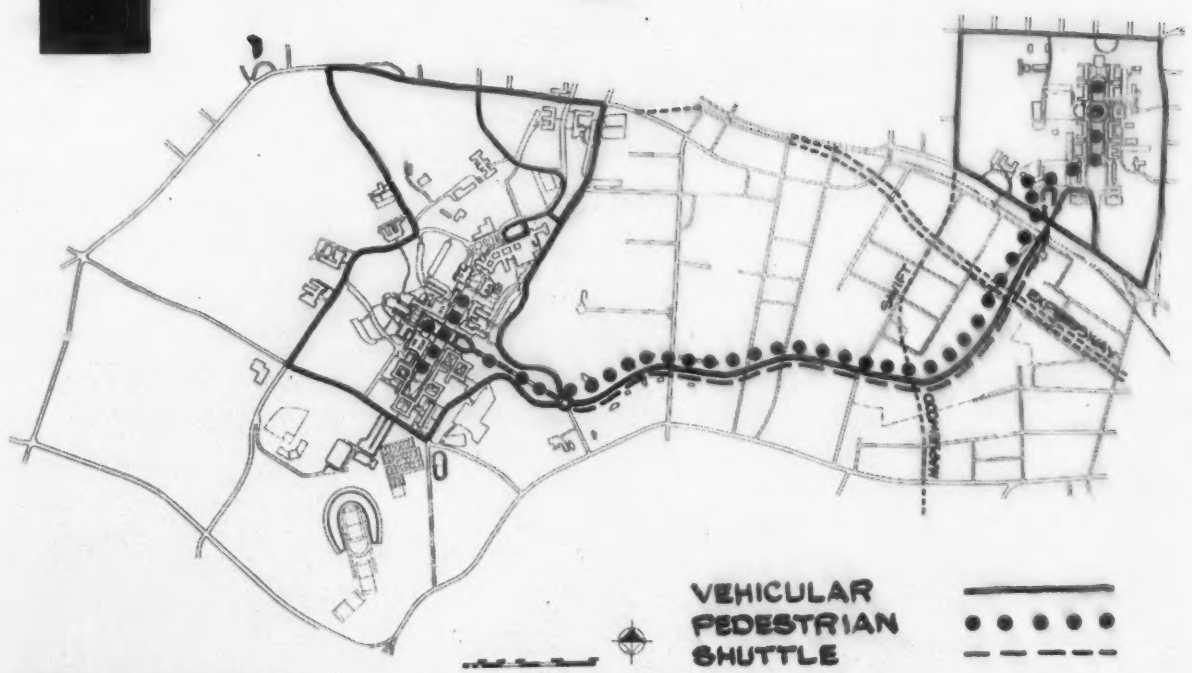
CIRCULATION 1



DUKE CAMPUS

C R S

CIRCULATION 2



DUKE CAMPUS

SOLUTION #3

In this case Campus Drive is used only by pedestrians and the campus shuttle, which would be more extensively developed. Private vehicles depend primarily on the urban street system. This makes the use of cars for intracampus movement very undesirable, which might be an advantage if a really good shuttle system is developed. The shuttle circulates more widely on each campus. Parking could be located in the central area (Parking Spine) and along the periphery. If campus traffic imposed undue congestion on urban streets, the University would be obligated to assist in improvement programs, or to provide a separate loop system.

PARKING

One solution for parking all cars in a "Parking Spine" along Campus Drive has been mentioned. Although this does not appear to be entirely feasible, some steps in this direction might be desirable. Certainly, the course of clearing trees and leveling hills to create surface parking lots as a setting for campus buildings is neither efficient, nor aesthetically desirable. The actual requirement for campus space for more important functions will dictate the development of more efficient parking solutions. The obvious solution is multi-story parking garages, at least in the critical internal areas. This saves land, trees, and building sites. The structures can be tastefully designed and utilize the rolling hillsides for both concealment and access from different levels.

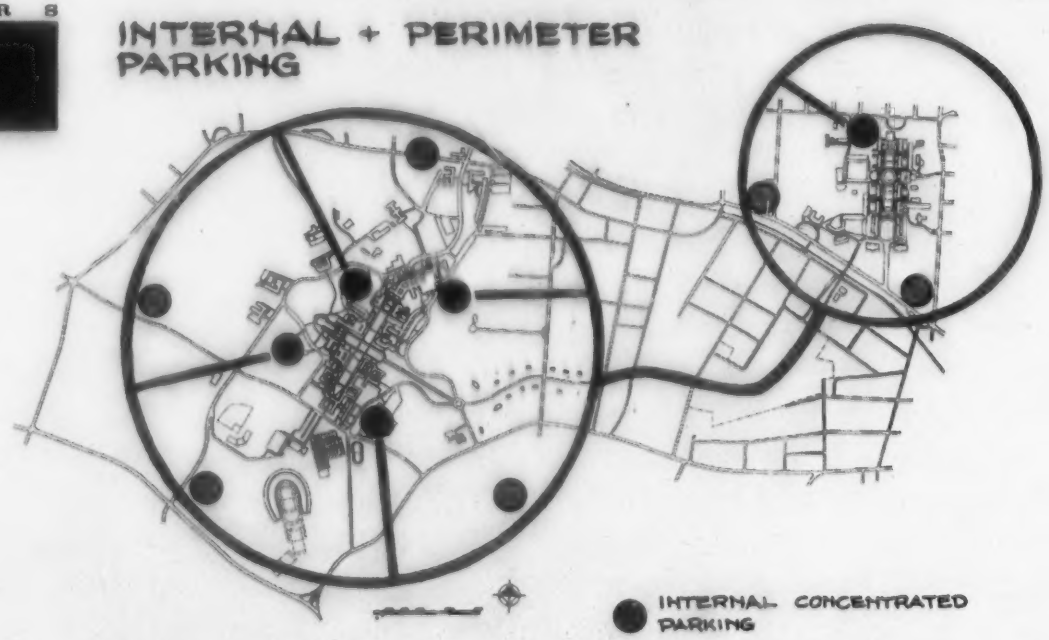
C R S

CIRCULATION 3

DUKE CAMPUS

C R S

INTERNAL + PERIMETER PARKING



DUKE CAMPUS

PARKING

Another possible application where future building sites lie in valleys below street level would be to place levels of parking below the building, up to street level, with the building above. These garages might even double as fallout shelters.

BUILDINGS

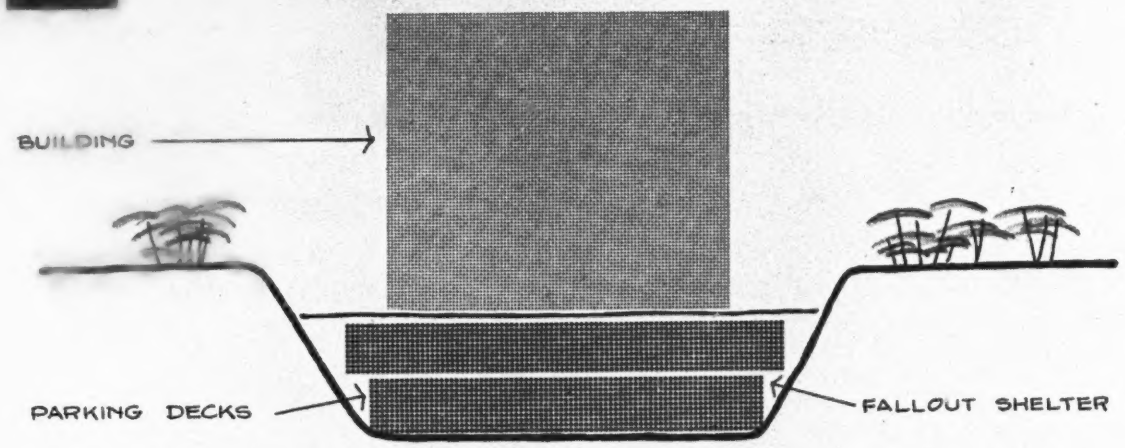
The pattern of buildings on the west end is well established; additions will be required, but all existing buildings will remain with the exception of the heating plant, service buildings, and possibly in the more distant future, the Card Gymnasium. The disruptive trend established by the recent buildings along Science Drive must be reversed, both with regard to the change to red brick, and the desecration of the natural topography. The landscape design in their vicinity should be oriented to softening the harsh effect of these buildings.

The situation at the Woman's College is more fluid. Several buildings are candidates for immediate removal, unless aesthetic reasons suggest a very expensive restoration. Preservation of the physical image of the Woman's College could provoke this desire. If these buildings are demolished, a large area would become open for redevelopment. The open spaces could then be restored with new buildings, or they could be materially revised.

The urgent need to rehabilitate certain remaining buildings on the east end will also force the University to a policy decision on academic program. Since a prime candidate in this regard is the science building, there is not only the matter of retaining academic activity there, but the basic implication that sciences can be taught remotely from their headquarters. If this is true, then intensive undergraduate student activity need not always be extended west of the Gothic quadrangle, and new avenues of unification are opened.

C R S

CONCENTRATED PARKING IN NATURAL VALLEYS



C R S

BUILDING OBSOLESENCE

DUKE CAMPUS - EAST

SCALE 1" = 600 FT.

LANDSCAPE

Landscape design usually offers the strongest unifying force on a campus, even where architectural consistency exists. There is more space and movement between buildings than within them, and the buildings, even in powerful groups, are incidents in the total landscape. Planting, walks, street lights, benches, courts, and walls formed by the building exteriors all become landscape design elements.

The fine qualities of past Duke landscape design and the wonderful natural environment must be maintained and improved. Great care must be exercised to continue the existing landscape tradition in newly developed areas of the west and central portions of the campus. Buildings must be planned to preserve the natural topography and trees to the greatest extent possible.

At the same time steps should be taken to overcome certain problem areas where improper design or neglect have occurred. Such examples fail to achieve the aesthetic potential of their setting or cause difficulties in maintenance.

C R S

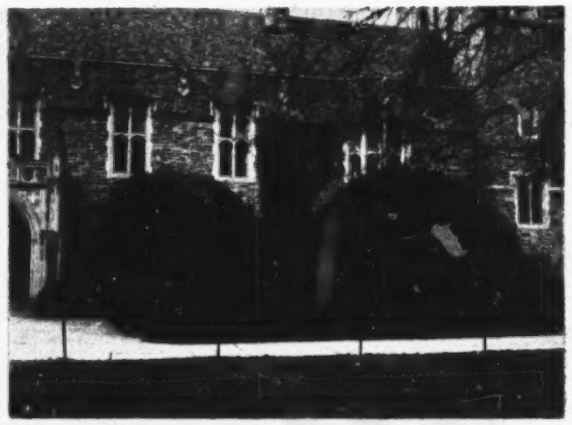
LANDSCAPE

DESIGN

Main criticism .... Conglomerations of overgrown shrubs in some places obliterate buildings

1 Large Laurels are excellent specimens but so are buildings. Should have space enough between to allow the complete admiration they both deserve

2. Lower type shrubs such as the Nandina-Hypericum mass at the Chapel are better for foundation planting.



1

2

C R S

LANDSCAPE PRESERVATION

Future development should insist on:

More skillful siting of new structures ...

Use of more retaining walls in proper places

Chapel is good example of where this has been accomplished

C R S

LANDSCAPE DESECRATION

Excesses of streets and surface parking desecrate the forests and topography

This is detrimental anywhere ... but especially in the beautiful environs of Duke

C R S

LANDSCAPE MAINTENANCE

1. Some slopes are too steep to maintain well and can be dangerous. They should be avoided if possible. Existing slopes might be planted with ground cover rather than grass.
2. Reforesting of disturbed areas should be expedited. Ground covers could be useful here also to control erosion.

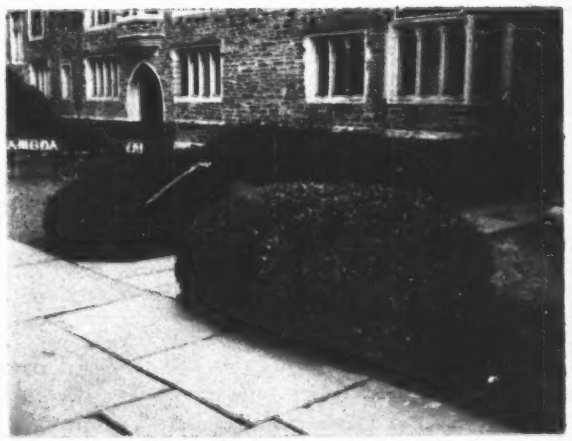
1

2

C R S

LANDSCAPE MAINTENANCE

Hedge clipping is a maintenance problem. Most large growing shrubs do not lend themselves to small hedges. Here are two different species mutilated to the point of almost losing their specific identity. Any large growing species would suffer the same fate by this treatment. Smaller species could be selected for the job with little or no clipping.



OVERVIEW

The objective of the plan is to personify and reinforce the goals of the University. If we are successful in our joint planning effort, the development concept will force the critical issues and implement their resolution.

Four basic concepts are presented for your review. They each reflect, in different ways, implications of the program and physical plant as described above. We think that they encompass all the valid divergent directions in which the University can develop. They are illustrated only in general terms so that the choice now can be clearly made from among truly basic concepts, undiluted by detail. Where locations for specific facilities are shown, they are intended only to illustrate possibilities and not as sites dictated by the concept. Although we hope that one basic concept will be selected for further development, we do not pretend that it can emerge from the realities of site and program crystal pure in every detail. We do feel that a strong concept is the best guide for making future decisions meaningful, even if expediency should impose some poor choices now and then. At least, every future decision can be evaluated against an established goal.

CONCEPT A

Concept A is designed to perpetuate the maximum identity of the Trinity, Woman's and Engineering Colleges. All future building development takes place either on the east or west ends of the campus. The Woman's College is reinforced with the addition of major centers for the Arts and Education. The Engineering College is relocated to a new and ample site for its maximum growth and emphasis. The central area is developed as the University Park.

Implications:

1. Separation of generic activities for identity.

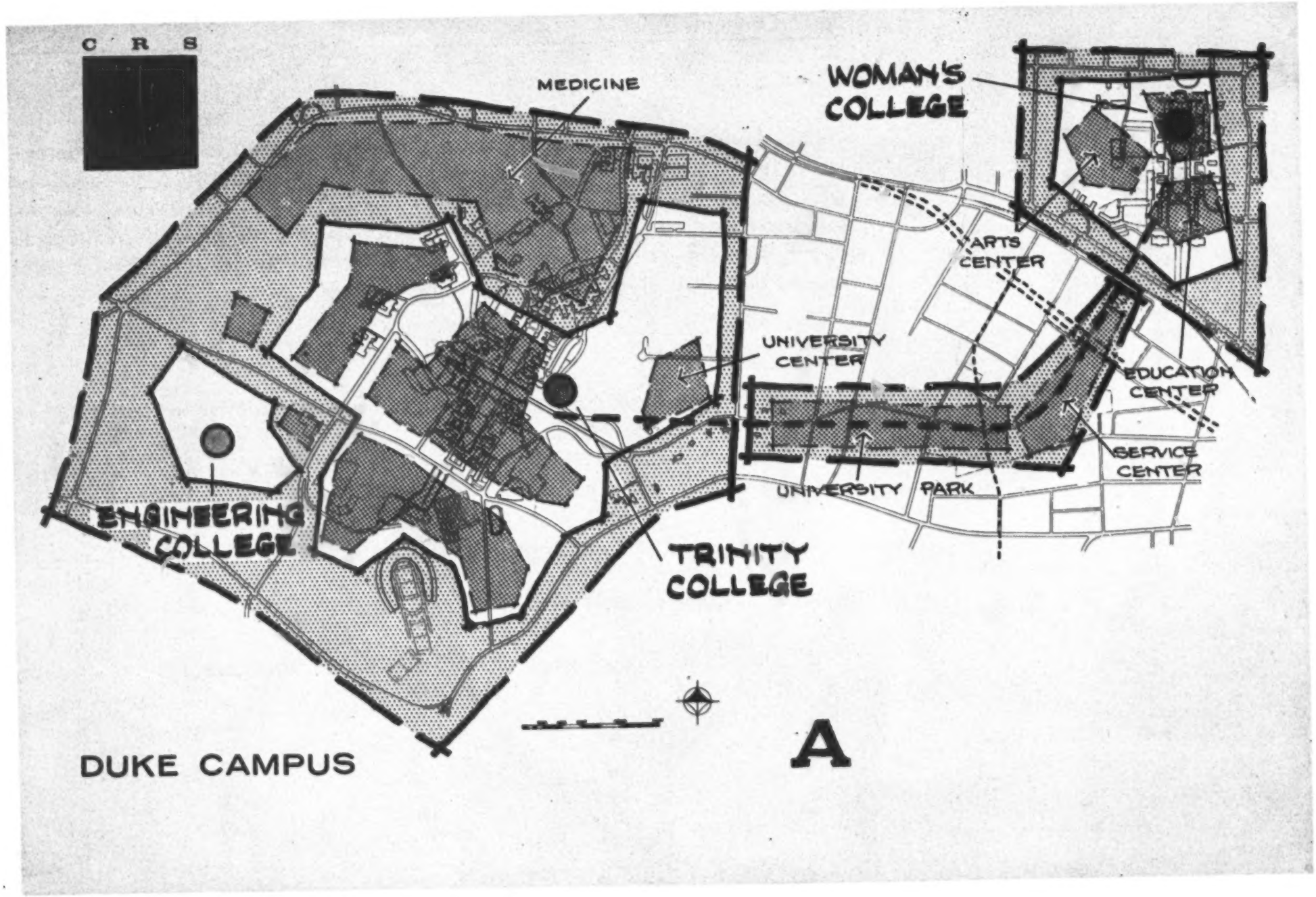
2. Duplication of unique facilities where feasible, and implied identity of those used jointly with the college in which they are located.

3. Use of Circulation Solution #2 or 3.

4. Increased distance between campus extremes.

5. Maximum implementation would involve duplication of teaching departments on each campus.

6. Inefficient utilization of prime central land.


C R S
MEDICINE
WOMAN'S COLLEGE
ARTS CENTER
UNIVERSITY CENTER
EDUCATION CENTER
SERVICE CENTER
UNIVERSITY PARK
ENGINEERING COLLEGE
TRINITY COLLEGE
DUKE CAMPUS
A

CONCEPT B

This concept is not presented for serious consideration but to illustrate the extreme implications of the educational program as theoretically organized, and the goal of unity. We understand that this concept is not a candidate for selection, and that it violates University policy. We show it in order to clarify some issues which may need resolution. All future development takes place, as compactly as possible, on one campus.

Implications:

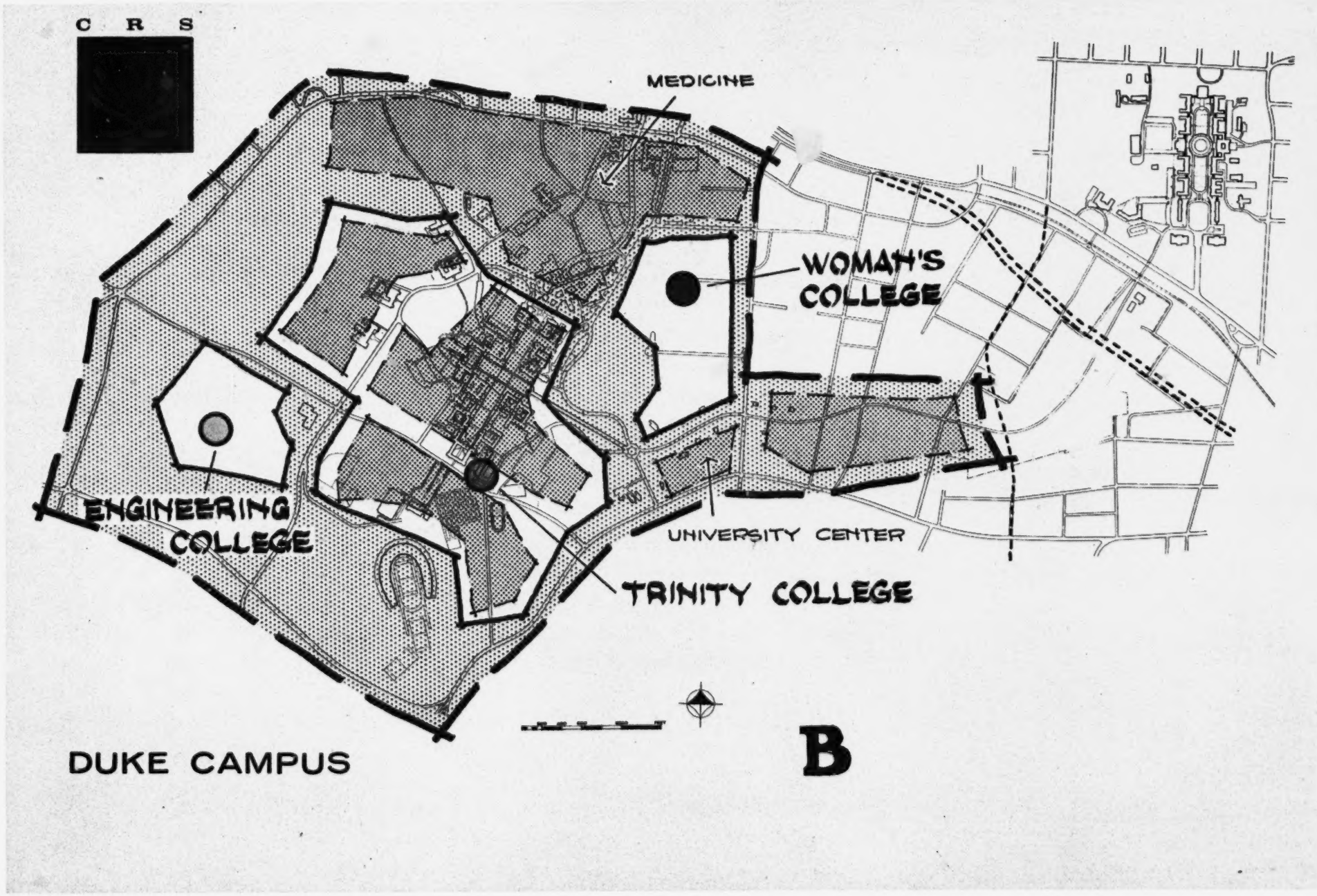
1. Maximum unification, with mixing of generic activities and joint use of unique facilities.

2. Minimum circulation and logistics problems.

3. Economic and emotional difficulties in moving the Woman's College.

4. Current planning for service center and heating plant obsoleted.

5. Removal of psychological barriers between campuses.



DUKE CAMPUS

B

CONCEPT C

This is essentially the "Activity Center" solution, with the Education Center shifted to the activity area because it will include a demonstration school and have a direct, daily public orientation. The Woman's College is reinforced with the Arts Center. Central Administration, University Center, and possibly the Graduate Center occupy prominent central locations. All academic growth takes place at either end to reinforce the existing identities.

Implications:

1. Separation of generic activities for identity and joint use of unique facilities for unity.

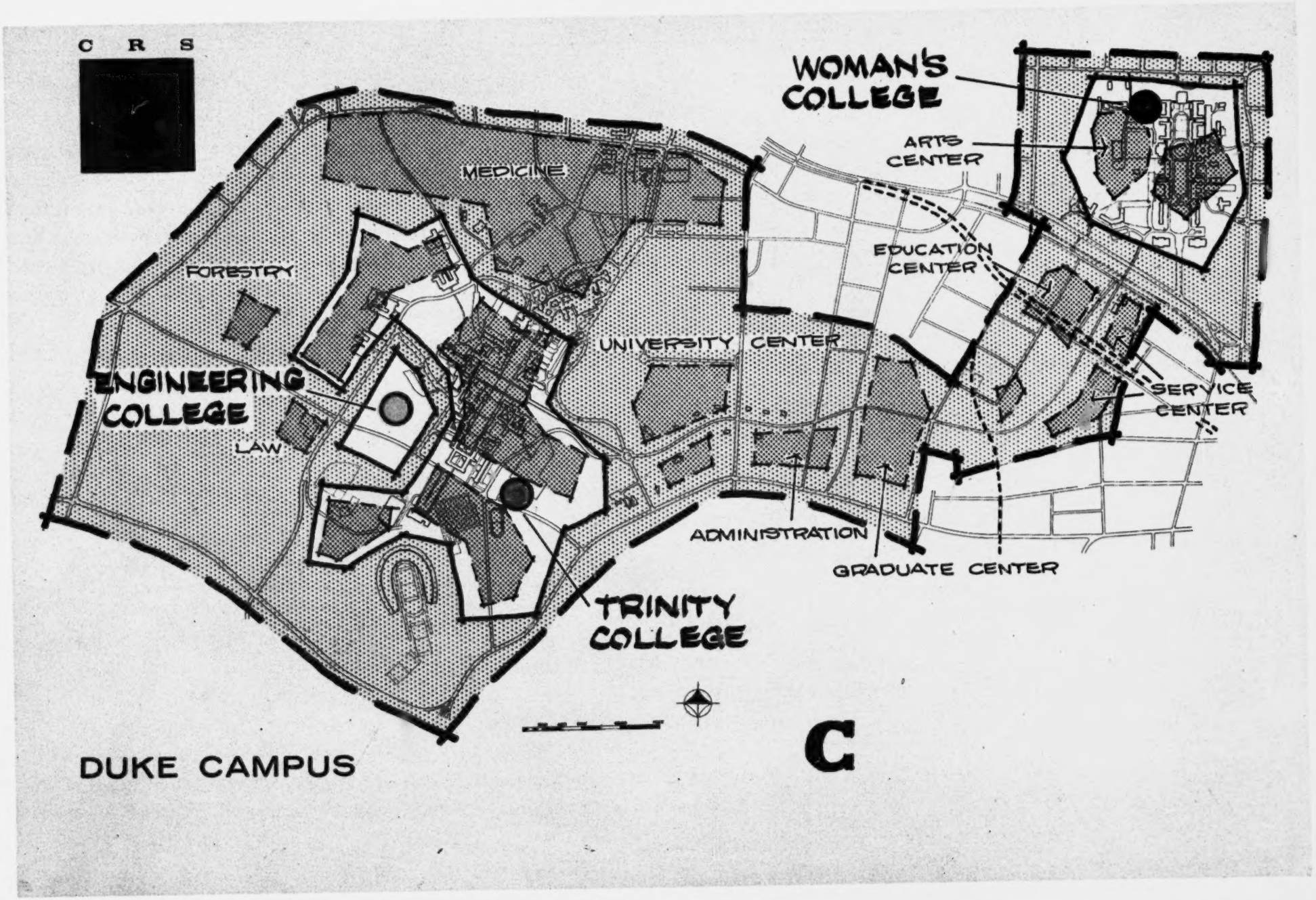
2. Circulation Solution #1 could be used.

3. Economically feasible--utilizes existing plant and central area with minimum land acquisition.

4. A convenient area could be made available for gradual relocation of Engineering College.

5. Public oriented activities and their attendant parking requirements are removed from the academic area.

6. Balance is achieved between goals of identity and unity.


C R S
WOMAN'S COLLEGE
ARTS CENTER
EDUCATION CENTER
SERVICE CENTER
MEDICINE
FORESTRY
UNIVERSITY CENTER
ENGINEERING COLLEGE
LAW
ADMINISTRATION
GRADUATE CENTER
TRINITY COLLEGE
DUKE CAMPUS
C

CONCEPT D

Concept D might be compared to the European custom of building the "new town" across the river (or elsewhere) and leaving the historic "old town" intact. This means that in the purest implementation of the concept all future construction, regardless of use, would take place in the central area. The Georgian and Gothic campuses would continue to be utilized and preserved as they are now.

This concept has the most unique and strongest physical implications of the four:

1. Retention of physical identity of the Colleges.

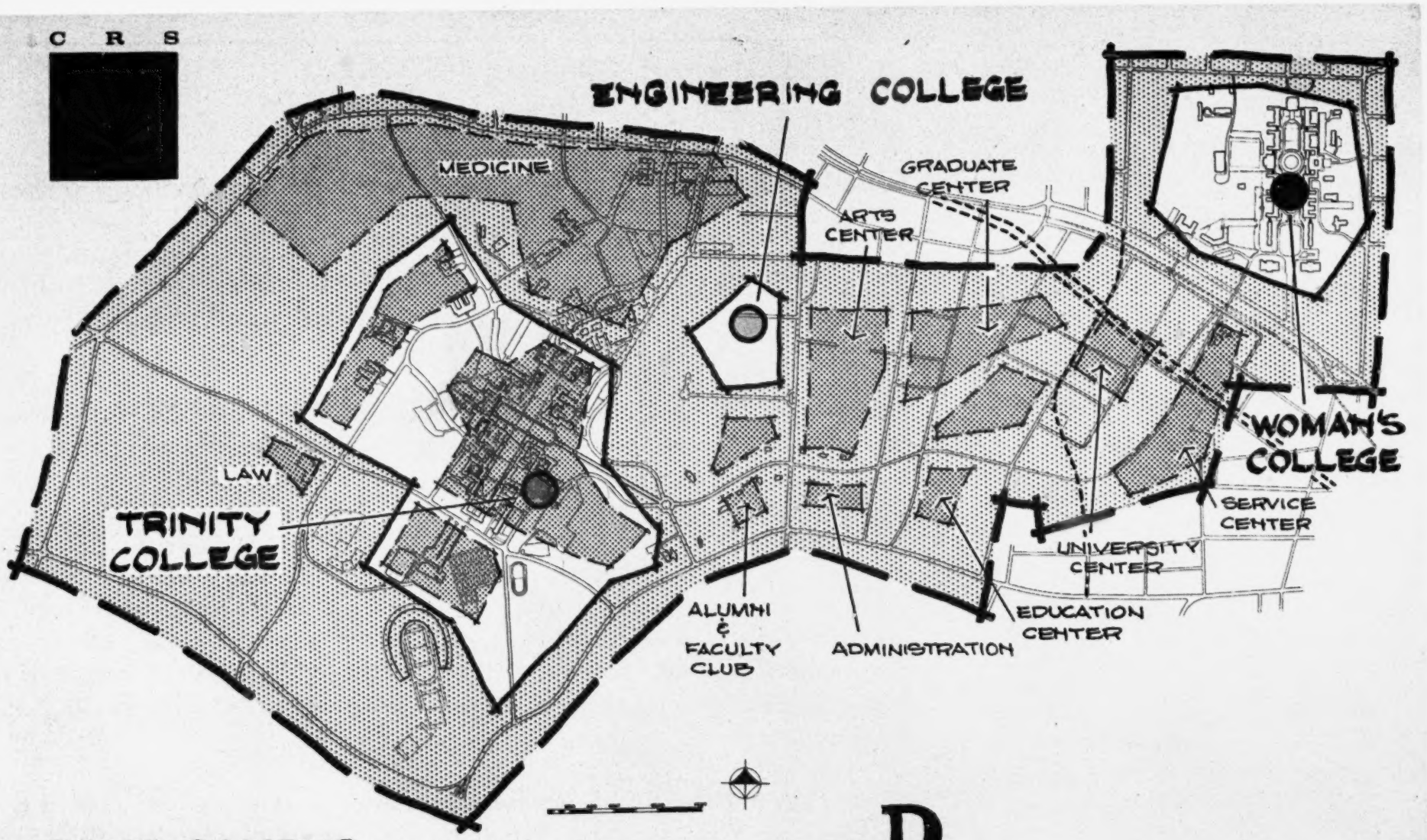
2. Maximum unity through mixing and joint use of both generic and unique features.

3. Maximum centralization for efficiency.

4. Opportunity to develop completely contemporary and functional "new campus" without either Gothic or Georgian architectural restraint.

5. Requires maximum land acquisition in center.

6. Imposes desire for restoring the old wood frame buildings on the Woman's College campus, for maximum retention of physical identity.



DUKE CAMPUS

D

CONCLUSION

A good campus plan must achieve a sensible balance among three salient considerations:

Program
Design
Cost

Program. You of the University are in a far better position than we to evaluate educational implications of the basic concepts. As we understand the program, with its unified teaching organization, the concepts would probably rate B, D, C, A, in order of the implementation of today's program.

Design. Design opportunities abound with each concept because of the existing architecture and topography. Concept "D" offers the most exciting prospect in many ways. It is doubtful that agreement on rating all the concepts could ever be reached among two or more designers, because of the many facets of design involved. Let us go out on a limb with a rating of D, C, A, and B.

Cost. Cost also has facets which complicate the issue. Initial cost must be balanced against operation, maintenance, and obsolescence. Dollar cost alone is not a guide to value received. But, assuming that the real estate could be sold at all favorably, Concept "B" would probably incur the least long range dollar cost, and "D" perhaps the greatest. The dollar cost rating is probably B, A, C, D.

EFC EVALUATION

In their review of a preliminary draft of this report, the Educational Facilities Committee gave approval to "a composite of Plans 'C' and 'D' which might best be expressed as 'C+' and 'D-'." There were five major points approved unanimously by the Committee in their memorandum to the University Planning

Committee, dated May 25, 1964. These were:

"1. In either Plan 'C' or Plan 'D' it is assumed by the Committee that no specific building sitings are intended by the draft presentations. Further careful study will be required to determine sitings.

2. A mix of academic and other facilities is an acceptable concept.

3. The Committee disagrees with the notion in Plan 'D' that 'all future construction, regardless of use, would take place in the central area.'

4. Delays in land acquisition necessary for Plan 'D' and considered ultimately desirable campus additions should not preclude the implementation of approved aspects of Plan 'C'.

5. The Committee agrees to the consideration of a design departure to a more contemporary and functional 'new campus' for the central area without prejudice.

In summary, the Committee feels that the land acquisitions for Plan 'D' are desirable, that the imaginative use of the central area between the East and West Campuses is sound, that a new design motif for the central area should be considered, that a careful amalgamation of Plans 'C' and 'D' should be worked out but that the rigidity of Plan 'D' is not acceptable and the limitations of Plan 'C' are not desirable."

QUESTIONS REFERRED TO THE PRESIDENT

The following excerpt from the EFC memorandum contains questions which we, too, urge that the administration give consideration prior to Phase 2 of the Planning Study:

"The Committee generally agreed, although not concisely nor unanimously, that certain questions posed in the Study were not answerable by the Educational Facilities Committee. It was further agreed that these questions would

undoubtedly take time to answer and that the President would probably wish to review them with his senior administrative colleagues and appropriate faculty groups prior to reaching decisions.

The questions referred to the President for consideration as suggested above are:

1. Teaching Methods
   Does Duke University wish to continue its present practice of emphasizing personal teaching, with emphasis on individual instruction in small classes (30 or less students), seminars and conferences? Can it be assumed that there will be only a limited requirement for Audio-Visual teaching facilities?

2. Enrollment Projections
   What are the enrollment projections which can be used in developing the Master Plan for Duke University's physical plant growth?

3. Educational Organization
   Is the present or comtemplated educational organization at Duke University to have any significant influence on the physical location of colleges, departments, or schools? If not, can it be assumed that University unity is to take precedence over college identity in a geographical sense?

4. Land Acquisition
   In Concept D (one of the two more favored concepts in Educational Facilities Committee) a vigorous land acquisition plan would be required. Assuming that such a plan of acquisition appears desirable, can the University afford to embark on a long range plan of land purchase?"